AMERICAN MUSEUM
Novitates

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CENTRAL PARK WEST AT 79TH STREET, NEW YORK, NY 10024
Number 3671, 59 pp., 32 figures, 2 tables November 30, 2009

The Asteioinea of Fiji (Insecta: Diptera: Periscelididae, Asteiidae, Xenasteiidae)

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ABSTRACT

Three of the six families in the acalyptrate fly group Asteioinea are reported from Fiji, comprising five genera and 23 species, with all except three of the species being new. The new species in their respective families are the following: *Stenomicra ariela*, *Si. brunnea*, *Si. castanea*, *Si. distincta*, *Si. pallida*, *Si. sylpha*, *Si. tokotaai*, and *Si. xoutha*; *Cyamops femobrunneus*, *C. femoctenidius*; *Stenocyamops luteus*, *Sy. pseudoluteus*, *Sy. robustus*, and *Sy. vittatus* (Periscelididae); *Asteia pleurovitta*, *A. pleurovittata*, *A. rotundiscuta*, *A. vanuaensis*, *A. vitiensis* (Asteiidae); and *Xenasteia fijiana* (Xenasteiidae). This is the first report of *Stenocyamops* outside of Southeast Asia. *Stenomicra distinctipennis* (Collin) is resurrected from synonymy with *S. fascipennis* Malloch, based on study of male genitalia belonging to a complex of *fascipennis*-like species from throughout the Pacific. *Asteia nigriceps* Bezzi is redescribed. Keys to genera and species are provided. Some species were collected in the rolled leaves of bananas and wild gingers (Zingerberales), which appears to be an important habitat for periscelidids in tropical forests.

INTRODUCTION

This is a taxonomic treatment of the species belonging to three families of small, obscure schizophoran flies from the South Pacific nation of the Republic of the Fiji Islands. The three families—Periscelididae, Asteiidae, and Xenasteiidae—belong to the superfamily Asteioinea (McAlpine, 1989), of which the taxonomy here is a small contribution towards understanding the arthropod biodiversity of the Fiji archipelago. Fiji consists of approximately 322 islands and over 500 islets, lying between 15°–20° S and 175° E–175° W. Four Fiji islands have sufficient size and relief to support lush tropical forests, which are Viti Levu (10,388 km^2), Vanua Levu (5587 km^2), Taveuni (435 km^2), and Kadavu (411 km^2). All of the insect sampling for this and most other insect studies has focused on these four islands, since smaller islands are low, drier, and support less forest. Climate is

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 ISSN 0003-0082

tropical, but because of the rugged, mountainous topography of the four largest islands there are dramatic effects to local climate. Northern halves of these islands, for example, have a pronounced dry season and the southern halves support moist, evergreen forests; the higher peaks and ridges of the central mountains are cool, misty, and wet.

Some islands and island groups in the Pacific have had intensive surveys of the insects, such as in New Caledonia (Tillier, 1988, and additional volumes in the *Zoologia Neocaledonica* series), Micronesia (e.g., Gressitt, 1954, and additional volumes in the Bishop Museum *Insects of Micronesia* series), and the Hawaiian Islands (Zimmerman, 1948, and many subsequent authors). The Hawaiian Islands are famous for spectacular insular radiations of various plants and insects, perhaps the best known being the 800 or so species of endemic Drosophilidae (Hardy, 1965). The study of Fiji arthropods, by comparison, has been relatively neglected until recently (Evenhuis and Bickel, 2005). As a result of funding from the Schlinger Foundation and the U.S. National Science Foundation, there has been an intensive effort to survey the arthropods of Fiji using Malaise trapping and specialized hand collecting (e.g., ants: Sarnat, 2006). Though Fiji is not as isolated as the Hawaiian Islands, its tropical climate, high plant endemism, volcanic geology with mountainous terrain, and the fact that it is an extensive archipelago, would seem to foster significant diversification of native arthropods, which indeed some studies indicate (Bickel, 2006).

In the process of preparing a treatment on the Drosophilidae of Fiji, samples of asteiid and periscelidid flies were included in the Malaise trap samples sent to me (these are often confused with drosophilids because of a pectinate arista). Recent fieldwork by me in 2008 in addition uncovered an unexpected diversity of Periscelididae and a large series of *Asteia*, which inspired this study. All of the specimens collected by hand were aspirated from the young, rolled and tubular leaves of bananas (*Musa*) and understory gingers (Zingerberaceae), a habitat that I have found in Southeast Asia and the neotropics to harbor diverse periscelidids, especially *Stenomicra*. As has been described elsewhere for *Stenomicra* and the closely related family Neurochaetidae (D.K. McAlpine, 1978, 1987a, 1987b, 1993), the Fiji periscelidids—and even the *Asteia* cohabiting with them—have a remarkable way of moving. These flies run over the surface of a leaf in all directions with uniform effort, including backwards and sideways, which gives them an appearance of floating over the surface. Flies of the closely related family Neurochaetidae always orient themselves with the head downward, the others with the head upward; all keep their wings folded while running.

Prior to this study there were only two periscelidids known from Fiji: *Cyamops fiji* Baptista and Mathis and *Stenomicra distinctipennis* Collin, the latter of which was synonymized with *S. fascipennis* Malloch by Khoo and Sabrosky (1989), but this is a misidentification and the status of *S. distinctipennis* is reinstated in the present paper. Only one Asteiidae was described from Fiji, *Asteia nigriceps* Bezzi, to which four additional species are added here, along with a species of the small Indo-Pacific family Xenasteiidae.

METHODS

Some specimens were collected in Malaise traps that were set up on Viti Levu, Vanua Levu, Taveuni, and Kadavu by Evert Schlinger, Michael Irwin, and Moala Tokota'a in 2002–2003, and maintained by M. Tokota'a and villagers in the field for a year or more. All specimens were preserved in ethanol. These were received at the AMNH in vials of drosophilids extracted from the Malaise residues. Additional specimens were collected by me in July 2008, by aspirating them from the young, rolled leaves of various understory Zingerberalean plants on Viti Levu and Vanua Levu.

Specimens in alcohol were air dried by first dehydrating them in 100% ethanol, then blotting them on tissue paper, separating the appendages with fine forceps, and then point mounting. Though there is some collapse of the cuticle, particularly of the smaller, softer *Stenomicra*, this preparation is more efficient than critical point drying. The terminalia of pointed specimens were dissected by first

softening the insect for several hours in a closed jar containing vinegar-soaked paper towels on the bottom. The dissected terminalia were then macerated in warm 10% KOH, rinsed with water and 70% EtOH, and transferred to glycerine, in which the genitalia were disarticulated using *minuten nadeln* mounted on matchsticks. Genitalia were mounted in a 1% agarose glycerine jelly between two coverslips, to orient the structures and prevent them from being crushed in a slide mount. The double coverslip mount allows anterior (internal genitalia) and posterior (surstyli, cerci) views without needing to remount. Wings were removed from select specimens with fine forceps, washed in 70% ethanol, and mounted on a glass slide in glycerine for photomicrography and measurements. For the periscelidids, the following metrics were important in vein proportions: ratio of greatest wing width to wing length (W/L, as measured from cross vein h to the wing tip), and the ratio of length of cross vein br-m (L br-m) to the length of the distance between this cross vein and dm-cu. Thorax length (ThL) was used as a reliable metric for body size, which was measured with an ocular micrometer from the anterior surface of the mesoscutum to the posterior tip of the mesoscutellum.

Holotypes of new species will eventually be deposited in the Fiji National Insect Collection, Suva, but are temporarily deposited in the Bishop Museum in Honolulu (BPBM) (most of the material collected in Malaise traps) and American Museum of Natural History, New York (AMNH) (material collected by D.A.G., and some from the Fiji Malaise trap survey), kept in trust for Fiji for when a new facility is completed.

SYSTEMATICS
THE ASTEIOINEA

Besides the three families treated here, another three placed in this group are the Aulacigastridae, Neurochaetidae, and Teratomyzidae (J.F. McAlpine, 1989). Aulacigastridae contains two genera with approximately 40 described species, virtually all in the genus *Aulacigaster* Macquart (in which there are also more than 40 undescribed Neotropical species: W.N. Mathis, personal commun.). *Curiosimusca* Rung, Mathis, and Papp comprises just three species from Southeast Asia. The genera *Nemo* D.K. McAlpine (Australasian, African) and *Ningulus* D.K. McAlpine (African) were formerly placed in the Aulacigastridae, but have now been placed in the family Neminidae with the genus *Nemula* Freidberg (from Madagascar). Neurochaetidae are very distinctive, flat flies comprising 23 living species from Australia, Africa, Madagascar, and Southeast Asia (D.K. McAlpine, 1978, 1987a, 1987b, 1993; Woodley, 1982), classified in the genera *Neurocytta* D.K. McAlpine, *Neurochaeta* D.K. McAlpine, *Neurotexis* D.K. McAlpine, and *Nothasteia* Malloch. Teratomyzidae has three genera (*Teratomyza* Malloch, *Teratoptera* Malloch, and *Neogeomyza* Séguy), with approximately 12 species from New Zealand, Australia, southern South America, Africa, Nepal, and the Phillipines.

Based on the distributions of Neurochaetidae and Teratomyzidae, it would not be surprising if they eventually are found in Fiji. Interestingly, there are no Aulacigastridae known from islands in the Pacific, which explains their absence in Fiji. Neurochaetidae have habits that are very similar to those of stenomicrine Periscelididae, specifically of running over the broad surfaces of leaves that contain a wet substrate below. Aulacigastridae are associated with tree trunks, particularly ones with wounds oozing sap or decaying ones that are hanging over streams. As currently defined (J.F. McAlpine, 1989), monophyly of Asteioinea is only weakly supported, and the position of Xenasteiidae in particular is controversial. That family, in fact, may be within or closely related to the Milichioidea.

FAMILY PERISCELIDIDAE

This is a global family of only approximately 80 described species, currently including 10 extant genera and one extinct genus (*Procyamops*, known from Baltic amber). Three of the extant genera are cosmopolitan (*Cyamops* [ca. 24 spp.], *Periscelis* [ca. 15 spp], *Stenomicra* [27 described species]), and the remaining genera are monotypic or contain just a few species and are mostly restricted to the neotropics (*Diopsosoma* Malloch,

Marbenia Malloch, *Neoscutops* Malloch, *Parafscutops* Mathis and Papp, *Planinasus* Cresson, and *Scutops* Coquillett). *Stenocyamops* Papp was the most recently described genus, known until now from a species from Thailand. The genus *Stenomicra* contains more than 100 new species from the neotropics alone (C.W. Sabrosky, unpubl.).

All of the Fiji periscelidids belong to three closely related genera: *Stenomicra*, *Cyamops*, and the apparently intermediate *Stenocyamops*. A close relationship of the three genera is based on the following synapomorphic features: lower portion of face protrudent, with projecting pair of "pseudovibrissae," loss of ocellar setae, loss of postocellar/postvertical setae, loss to great reduction of postpronotal setae, vein CuA_1 with an abrupt (vs. evanescent) distal end, tVII + sVIII fused in males, and females with syntergosternite VII. *Cyamops* is clearly a monophyletic group, but it is possible that *Stenocyamops* may be just a basal grade to *Stenomicra*. A detailed phylogenetic analysis of these genera is needed at the species level, but in lieu of a monographic treatment of the world species of *Stenomicra*—of which there are hundreds—such an analysis would be premature at present.

Genus *Stenomicra* Coquillett

Stenomicra Coquillett, 1900: 262. Type species: *S. angustata* Coquillett, by original designation.

DIAGNOSIS: Small, slender, generally light-colored flies with slender wings; possessing the following combination of features that distinguish the genus from *Cyamops* and/or *Stenocyamops*: (maxillary) palps reduced to minute papillae; inner vertical setae present, proclinate (absent in *Cyamops*); acrostichal setulae in one incomplete row, or lost (two or more rows in *Cyamops*); anal lobe of wing, alula, vein A_1+CuA_2 completely or virtually lost (all these features present in *Cyamops*; some features present in *Stenocyamops*); anepisternum without silvery microtomentum or row of setae on posterior margin; paired structures of male genitalia symmetrical (asymmetrical in *Cyamops*), hypandrium asymmetrical (symmetrical in *Stenocyamops*).

Stenomicra ariela complex

This is a newly designated, taxonomically informal group of seven small *Stenomicra* species in Fiji that have a largely yellowish body color, some of them with light brown infuscation over the dorsum of the thorax and abdomen. The group is not necessarily monophyletic; such body coloration is common throughout the genus. In lieu of a worldwide revision of *Stenomicra* it would be difficult to identify even genitalic synapomorphies of these Fiji species. While subtle differences do occur in coloration and chaetotaxy, they are difficult to separate because of considerable overlap in external variation. The most reliable features for identification are in the male terminalia, especially the structure of the aedeagus and surstyli. As a result, females (9 from Viti Levu, 1 from Vanua Levu, 3 from Taveuni, which seem to represent three species) have only tentatively been assigned to species (map, fig. 22). Because of the great external similarity a detailed description is provided just for *Stenomicra ariela*, n. sp., and *S. tokotaai*, n. sp.; diagnoses for the other species describe all relevant variation.

Stenomicra ariela, new species

Figures 5, 6

DIAGNOSIS: Easily distinguished from all other Fijian *Stenomicra* by the completely yellow body (only ocellar triangle dark brown), and by the male genitalia with the broad, incurved surstylus and the bulbous aedeagus.

DESCRIPTION: ThL = 0.54 mm. Differs from *S. distincta* and *S. tokotaai* by the following features: Arista with four dorsal, three ventral branches. Basal flagellomere with pointed apex, apical tuft of setulae nearly equal in length to flagellomere. Posterior fronto-orbital seta very far anteriad on frons, past dorsal level of antennae; both FO setae appear reclinate (possibly preservational, see below). Pseudovibrissae fairly long, length nearly equal to that of posterior FO seta. Row of four long, fine acrostichals; dorsocentrals in graded series, anteriormost shortest, posteriormost dc longest (approximately 1.4× length of preceding dc). Notopleuron with

four setae; dorsal two about 0.5× length of ventral ones. One katepisternal seta present, erect. Halter yellow, not white. Forefemur with two lateral rows long, erect, fine setae, plus two longer setae that project posteriad. Midfemur with ventral row of long, stiff, fine setae. Wing hyaline, rather slender and long (W/L = 0.38); tip slightly and bluntly pointed; dorsal edge of costal vein with row of ca. 5 stout setae near junction of R_1. Cross veins r-m and m-cu close together (L r-m / L between r-m and m-cu = 0.23). Alula, anal lobe, vein A_1+CuA_2 essentially absent. Male genitalia: Epandrium shallow, lateroventral lobes with ca. 7 large, stiff setae pointed downward; cerci largely membranous, attached to epandrium, each lobe with ca. 10 minute, spinulelike setae, one very long seta on ventral margin. Surstylus broad, curved inward and forming ventral shelf. Hypandrium a simple, flat, bilobed plate, nearly symmetrical; aedeagus bulbous, ventral portion covered with microtrichia, lateral, membranous lobe of aedeagus with microtrichia and sclerotized strip. Base of aedeagus broad, trough shaped, with two lightly sclerotized appendages (paraphyses?), left one displaced laterally, right one pointed ventrad.

TYPE: Holotype, male: FIJI: **Viti Levu**, VII.9.08, Nakobalevu Rd., 394 m., 18°03′31″S, 178°24′55″E, in rolled leaves, D. Grimaldi (no. 39: terminalia dissected). In AMNH. Known only from a unique male. The thorax and appendages are in good condition, but the eyes, face, and portion of the frons are partly collapsed.

ETYMOLOGY: From Greek and Hebrew, meaning an airy sprite, in reference to the light-colored body of this species and the floating movements of flies in this genus.

Stenomicra brunnea, new species

Figures 4, 7

DIAGNOSIS: Frons whitish, pollinose; scutum and scutellum dark brown, scutum with yellow longitudinal stripe that is narrower than distance between dorsocentrals; pleura without brown infuscation. All abdominal tergites brown; wings hyaline. Scutellum narrow. Anterior fronto-orbital and postvertical setae minute and light, barely detectable. Arista with 5 dorsal, 2 ventral branches. Besides coloration, also distinguished from similar species by male terminalia: Surstylus relatively short, apical third curved upward, apex acute; with dense setulae over much of surstylus. Aedeagus with straight trunk, apex brushy and with narrow tip.

TYPES: Holotype, male (dissected, no. 57), FIJI: **Taveuni**: Cakaudrove Prov., 5.6 km SE Tavuki Vlg., Devo Peak, 1187 m, 30.VI–14.VIII. 2004, Malaise 1, Schlinger, M. Tokota'a, 16.843°S, 179.966°W, FBA 50904. ThL = 1.22 mm; L r-m / L between r-m and m-cu = 0.53. In BPBM. Specimen is missing the scutellar and most dorsocentral setae. In addition, there are 3 females that match the male holotype in color and chaetotaxy, also from Cakaudrove Prov.: 3.2 km NW Lavena Vlg., Mt. Koronibuabua, 217 m, 24.II–11.III.04, Malaise 3, Schlinger and Tokota'a, 16.855°S, 179.89°W, FBA127415, 153258, 168376.

ETYMOLOGY: From the Latin, *brunneus*, for brown, in reference to the color of the scutum and tergites.

Stenomicra castanea, new species

Figures 4, 8

DIAGNOSIS: Frons white; scutum and scutellum evenly light brown, without central longitudinal light stripe; light brown infuscation on dorsal portion of pleura. Wing hyaline. Abdominal tergites I–IV light brown. Besides the scutum coloration, best distinguished on basis of male terminalia: surstyli straight, not curved, with blunt apex, without microtrichia and few setulae; trunk of aedeagus straight, apex brushy; syntergosternite VII ventrally with median lobe on posterior margin.

TYPE: Holotype, male (dissected, no. 59), **Viti Levu**: Naitasiri Prov., 4.8 km N Veisari Stlmt, log rd to Waivudawa, 300 m, 12.XII–3.I.03. Malaise 1. Schlinger, Tokota'a, 18.075°S, 178.362°E, FBA 178234. ThL = 1.20 mm; L r-m / L between r-m and m-cu = 0.50. Type is in good condition, with most of head and thoracic setae intact. In BPBM.

ETYMOLOGY: From the Latin *castaneus*, for the color of chestnuts, in reference to the color of the scutum and scutellum.

Stenomicra pallida, new species

Figure 9

DIAGNOSIS: An entirely whitish-yellow species, with barely any infuscation on scutum or tergites; frons creamy white; wing hyaline. Anterior fronto-orbital seta very fine, minute; arista with 5 dorsal and 2 ventral branches; 5 dorsocentrals in each row, row of 3 acrostichals. Male terminalia distinctive: surstyli slightly S-shaped, with only three apical/subapical setulae (no microtrichia); aedeagus spiculed, with central groove, without trunk, tip narrow; strip of aedeagal sclerite not found.

TYPE: Holotype, male (dissected, no. 68), **Viti Levu**: Naitasiri Prov., 4 km WSW Colo-i-Suva Village, Mt. Nakobalevu, 372 m, 17.III–9.IV.03, Malaise 3, Schlinger, Tokota'a, 18.055°S, 178.424°E, FBA 144101. ThL = 1.22 mm; Wing W/L = 0.30; L r-m / L between r-m and m-cu = 0.40. Specimen is in good condition; deposited in BPBM.

ETYMOLOGY: From the Latin, *pallidus*, for pale, in reference to the entirely whitish-yellow body coloration.

Stenomicra sylpha, new species

Figures 4, 10

DIAGNOSIS: Body almost entirely light yellow, abdominal tergites I–IV slightly darker; frons white, pollinose. Wing hyaline. Pseudovibrissae stout, laterally flattened, slightly scalelike. Arista with 5 dorsal and 2 ventral branches. Best distinguished from similar yellow and light brown species by male terminalia: Each cercus with long, thick seta at apex of ventral margin; cercus anteriorly (underneath) with row of 7–8 short setae. Surstylus long, curved and arched, apically pointed, with very sparse setulae and microtrichia. Aedeagus short (without visible trunk), membranous, spiculed.

TYPES: Holotype, male (not dissected), FIJI: **Taveuni**, Cakaudrove Prov., 5.3 km SE Tavuki Vlg. [Village], Mt. Devo, 1064 m, 3–20.XII.2002, Malaise 3. Coll. Schlinger, Tokota'a. 16.841°S, 179.968°W, FBA 153797. ThL = 1.55 mm; Wing W/L =0.36; L r-m / L between r-m and m-cu = 0.33. In BPBM. Paratypes: 1 male (no. 55 [150902] dissected), 5 females, all **Taveuni**: Cakaudrove, 5.6 km SE Tavuki Vlg., Mt. Devo, 892–1187 m, 30.VI–14.VIII, 2004, Malaise 1, 3, 4; Schlinger and Tokota'a, 16.843°S, 179.966°W, FBA 149851, 149860, 150903, 151943, 154918, 154919. In BPBM and AMNH. Genitalia of the holotype are well displayed, confirming that this specimen and the dissected paratype are the same species.

ETYMOLOGY: From the French, *sylphe*, meaning a fairylike spirit of the air, in reference to the pale body coloration of this little fly.

Stenomicra tokotaai, new species

Figures 1, 2, 3, 5 10

DIAGNOSIS: Scutum and scutellum light brown, with light bluish pruinescence; pleura mostly light yellow with light brown stripe on dorsal margin of anepisternum and anatergite; wing completely hyaline, long, slender, with cross veins very close together; most abdominal tergites light brown, tV–VI in females and tV–VIII in males light yellow. Surstylus (male) simple, slender (length 6× greatest width), slightly curved, tip acute.

DESCRIPTION: ThL = 0.60 mm. *Body coloration*: Frons entirely dull, whitish beige, small area between ocelli dark brown; face and facial protuberance light brown; oral margin, cheek, postgena, proboscis, antennal pedicel and basal flagellomere light yellow. Eyes light red to pink. Mesoscutum and scutellum with ground color a very light brown, having light bluish pruinescence; lateral (notopleural) edges diffuse, tip of scutellum light. Most of pleuron light yellow, but with thin, light brown stripe on dorsal margin of anepisternum and anatergite. Legs entirely light yellow; wing entirely hyaline (no areas of infuscation or white); haltere entirely white. Abdominal tergites V–VI in females and tVI–VIII in males light yellow; all others light brown; all sternites light brown. Setae on head and thorax dark copper; leg setae light.

Head: Slightly flattened, greatest length oblique in profile. Ocellar setae lost; inner vertical setae present, proclinate; outer vertical setae reclinate. Two pairs fronto-orbital (FO) setae present, both pairs significantly anterior to level of ocellar triangle; anterior FO proclinate fine, minute, ca. 0.3× (male) to

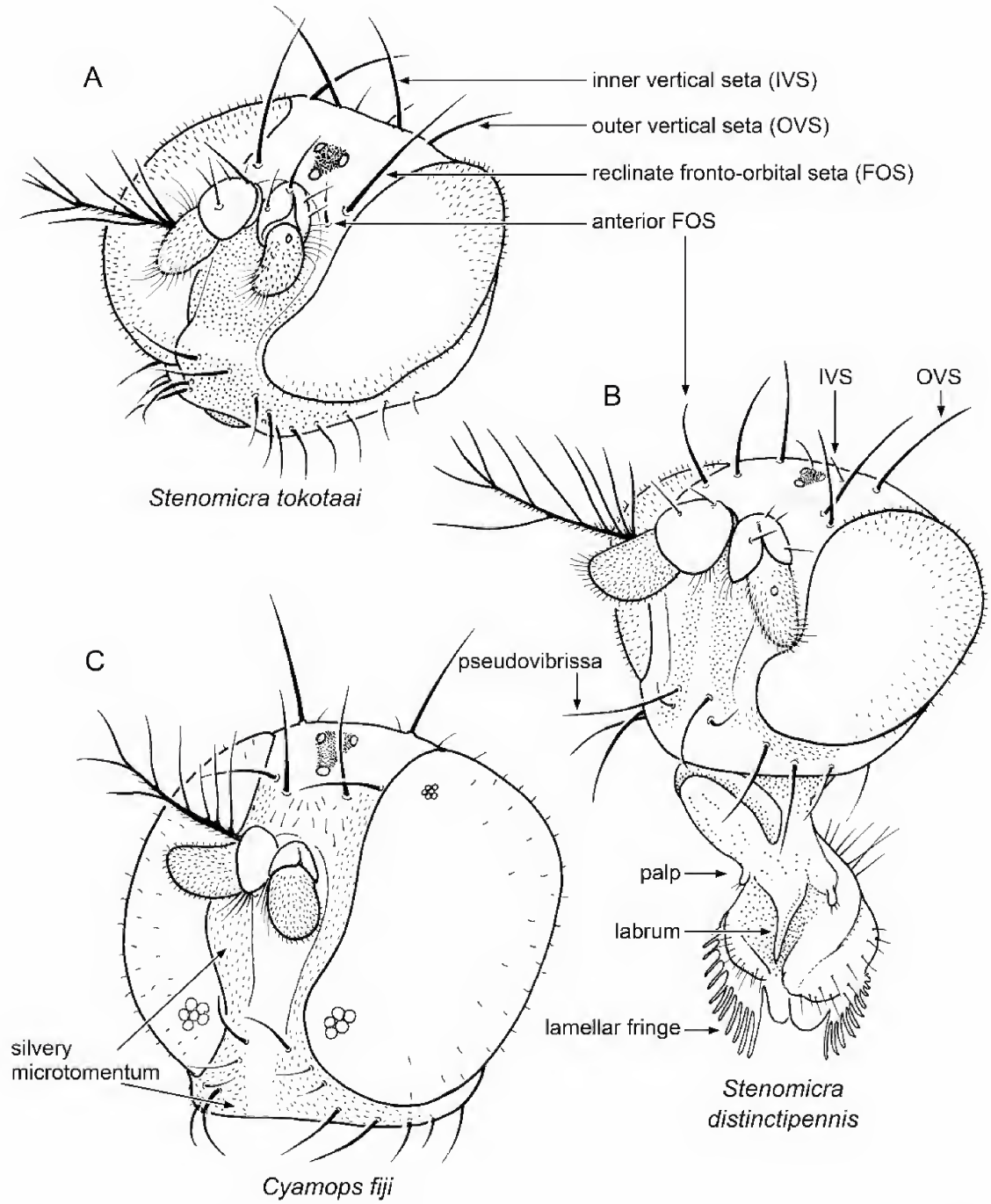

Fig. 1. Heads of select Fiji Periscelididae, oblique frontal views (not to same scale). **A.** *Stenomicra tokotaai*, n. sp. **B.** *Stenomicra distinctipennis* Collin. **C.** *Cyamops fiji* Baptista and Mathis.

0.4× (females) length of posterior FO; posterior FO reclinate. Eyes emarginate on face around antennae and on postgenal margin; with dense, short interfacetal setulae (slightly longer dorsally); no differentiation of facets; distance between eye margins on face slightly greater than distance between pseudovibrissae. Antenna: Scape with fine dorsal seta

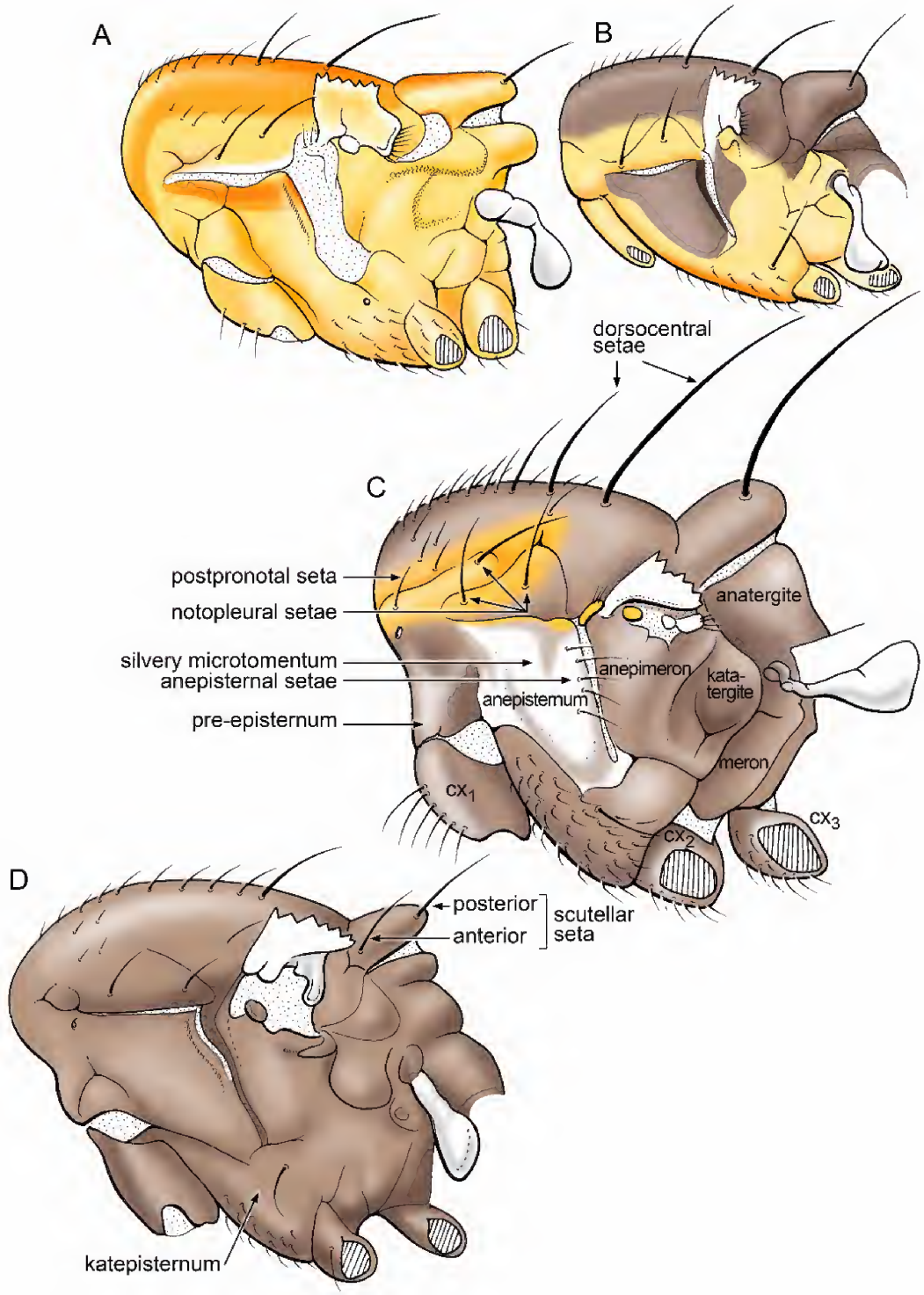

Fig. 2. Thoraces of select Fiji Periscelididae showing coloration, left lateral views (to same scale). **A.** *Stenomicra tokotaai*, n. sp. **B.** *Stenomicra distincta*, n. sp. **C.** *Stenocyamops robustus*, n. sp. **D.** *Cyamops fiji* Baptista and Mathis.

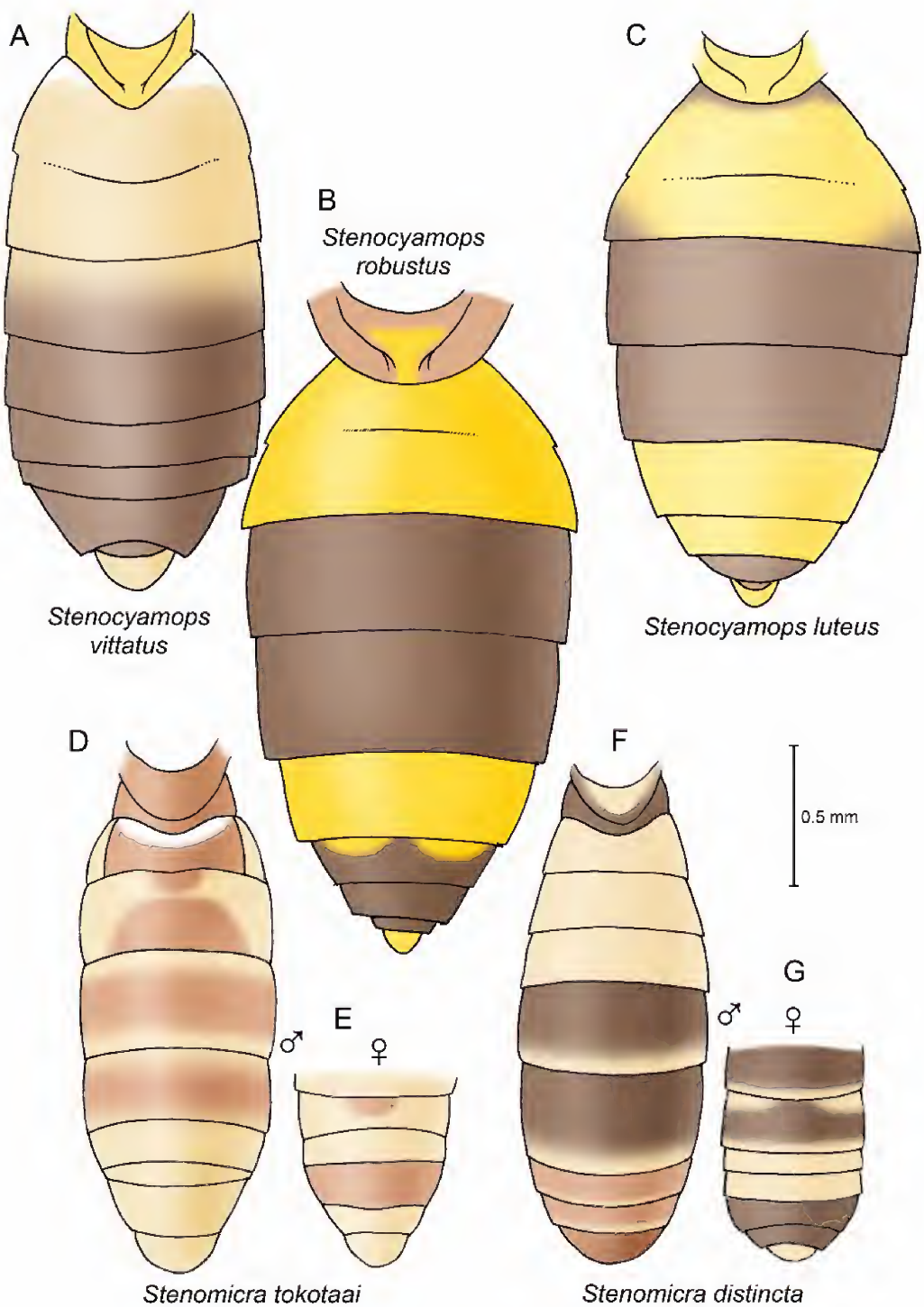

Fig. 3. Abdominal coloration of select Fiji Periscelididae, dorsal views (to same scale). **A.** *Stenocyamops vittatus*, n. sp. **B.** *Stenocyamops robustus*. **C.** *Stenocyamops luteus*, n. sp. **D, E:** *Stenomicra tokotaii*, male (D) and apex of female abdomen (E). **F, G:** *Stenomicra distincta*, male (F) and apex of female abdomen (G).

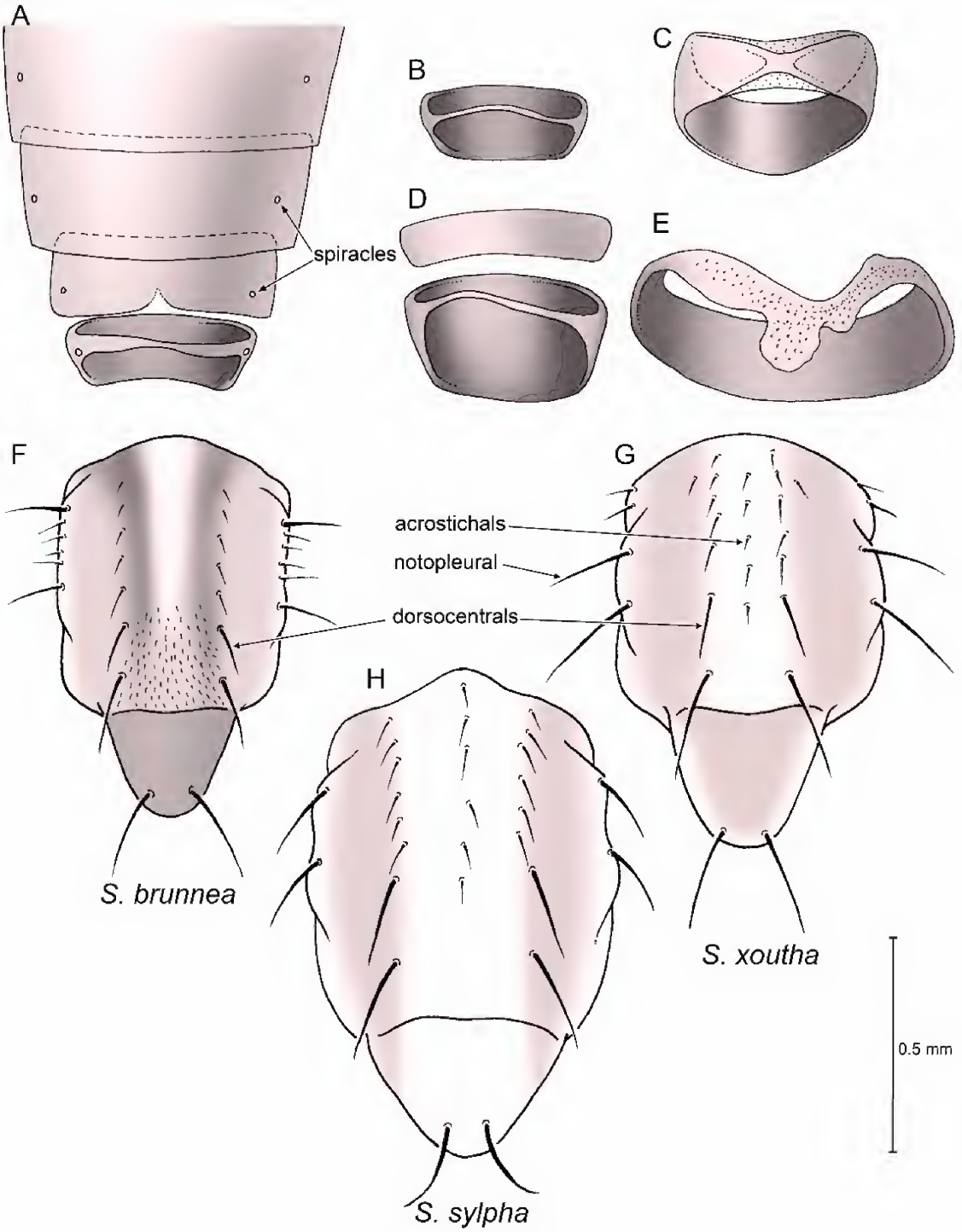

Fig. 4. A–E: Terminal abdominal segments and syntergosternites of male Periscelididae (ventral views, not to same scale). **A.** *Stenocyamops robustus*. **B.** *Stenocyamops luteus/pseudoluteus*. **C.** *Stenomicra distincta*. **D.** *Stenomicra distinctipennis*. **E.** *Stenomicra castanea*. **F–H:** Thoraces (dorsal view) of select Fiji *Stenomicra* (to the same scale). **F.** *S. brunnea*. **G.** *S. xoutha*. **H.** *S. sylpha*.

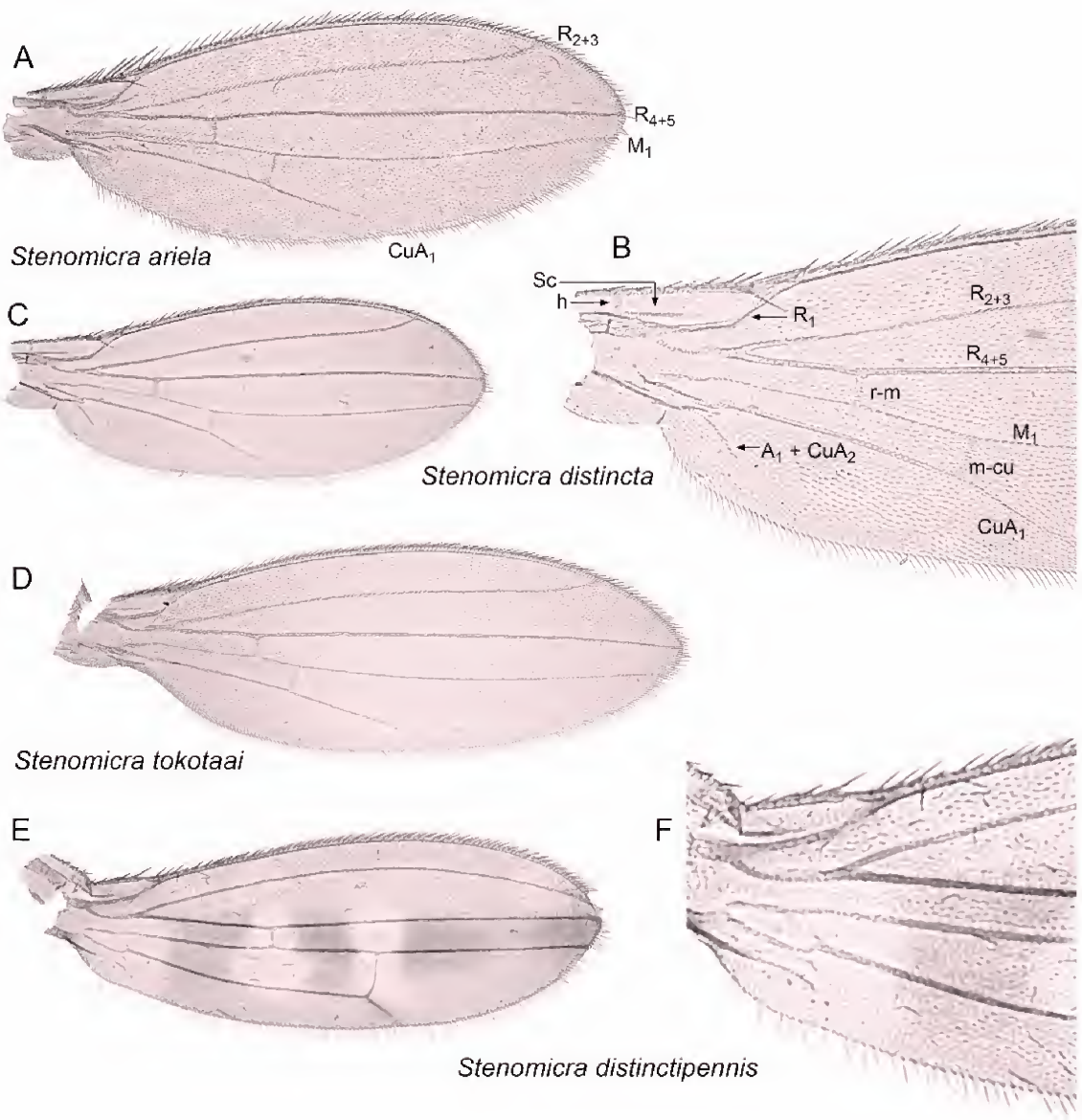

Fig. 5. Wings and details thereof of Fiji *Stenomicra*. **A.** *S. ariela*. **B, C.** *S. distincta*. **D.** *S. tokotaai*. **E, F.** *S. distinctipennis*.

pointed dorsolaterad. Pedicel with dorsal seam, mesal surface much longer than lateral surface; pedicel with 2–3 setae, thick dorsal and frontal ones, finer seta on lateral surface. Basal flagellomere with fringe of fine, long, whitish setae on frontal edge. Arista with four dorsal and two ventral branches. Face slightly concave between antennae and protuberant lower portion; ptilinal sutures extend ventrally to just lateral of pseudovibrissae. Pair of short, stout pseudovibrissae on facial protuberance; these setae projecting forward; bases separated by distance approximately 3× diameter of basal sockets. Oral margin ventral to pseudovibrissa with row of six setae, projecting laterad and slightly downward. Clypeus and very narrow U-shaped sclerite; labellum large, occupying most of oral cavity; palpi extremely reduced, papilliform.

Thorax: Scutum with single, incomplete row of 6–7 long, fine acrostichals; three pairs larger

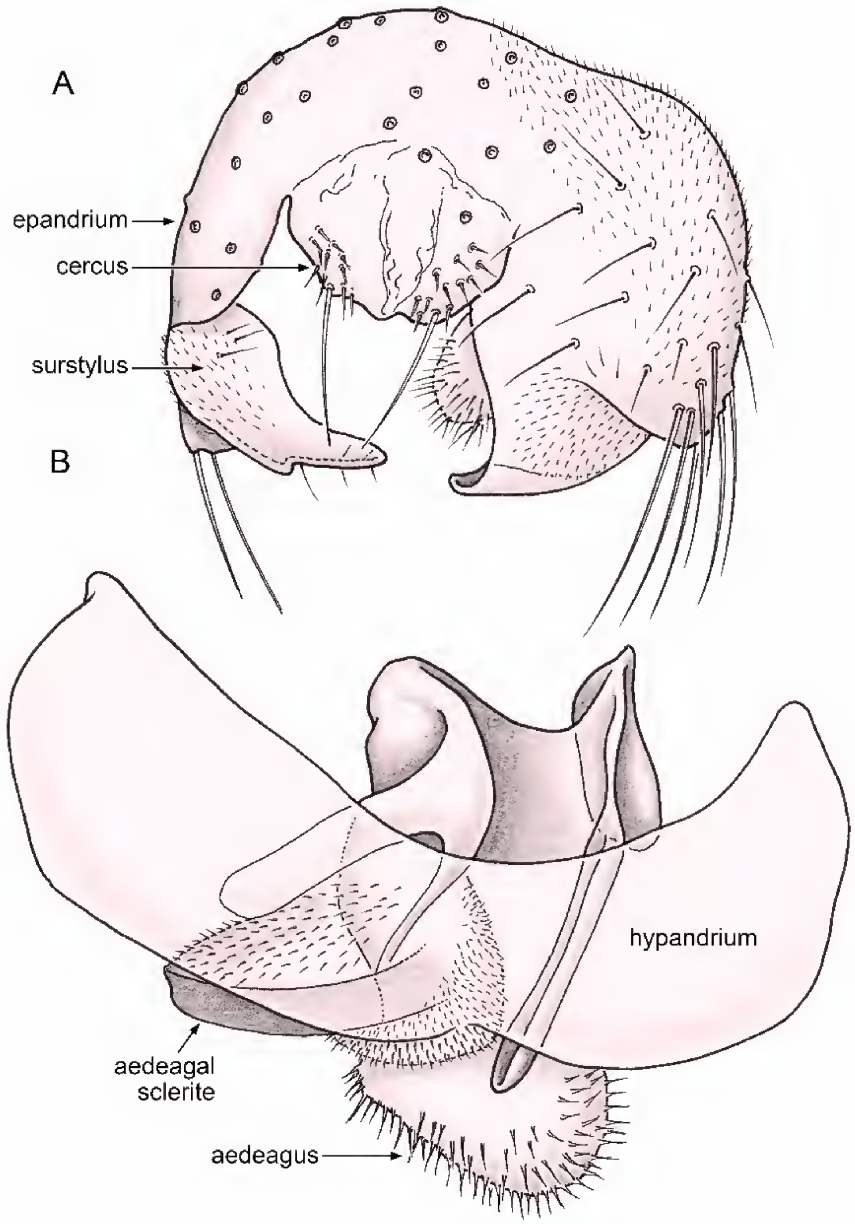

Fig. 6. Male terminalia of *Stenomicra ariela* (not to same scale) **A.** Epandrial complex, posterior view. **B.** Hypandrium, aedeagus, and aedeagal sclerite.

dorsocentral setae (finer setulae anterior to these), anteriormost pair smallest, posterior pair longest. Scutellum with pair of apical setae only, no preapical setae. Postpronotal lobe, anepisternum, katepisternum devoid of setae; notopleuron with two setae. Ventral surfaces of coxae, katepisternum, mesosternum with fine, sparse, yellowish setulae. Ventrolateral surface of fore femur with row of 3–5 long, fine, stiff setae; midtibia with long apical spur, length of spur ca. 2.5× apical width of tibia; hind basitarsomere with seam of fine, transverse combs of setulae. Wing: hyaline, slender and long (W/L = 0.35), no break at cross vein h, weakness in C near tip of Sc (but not a break); vein C ends at tip of

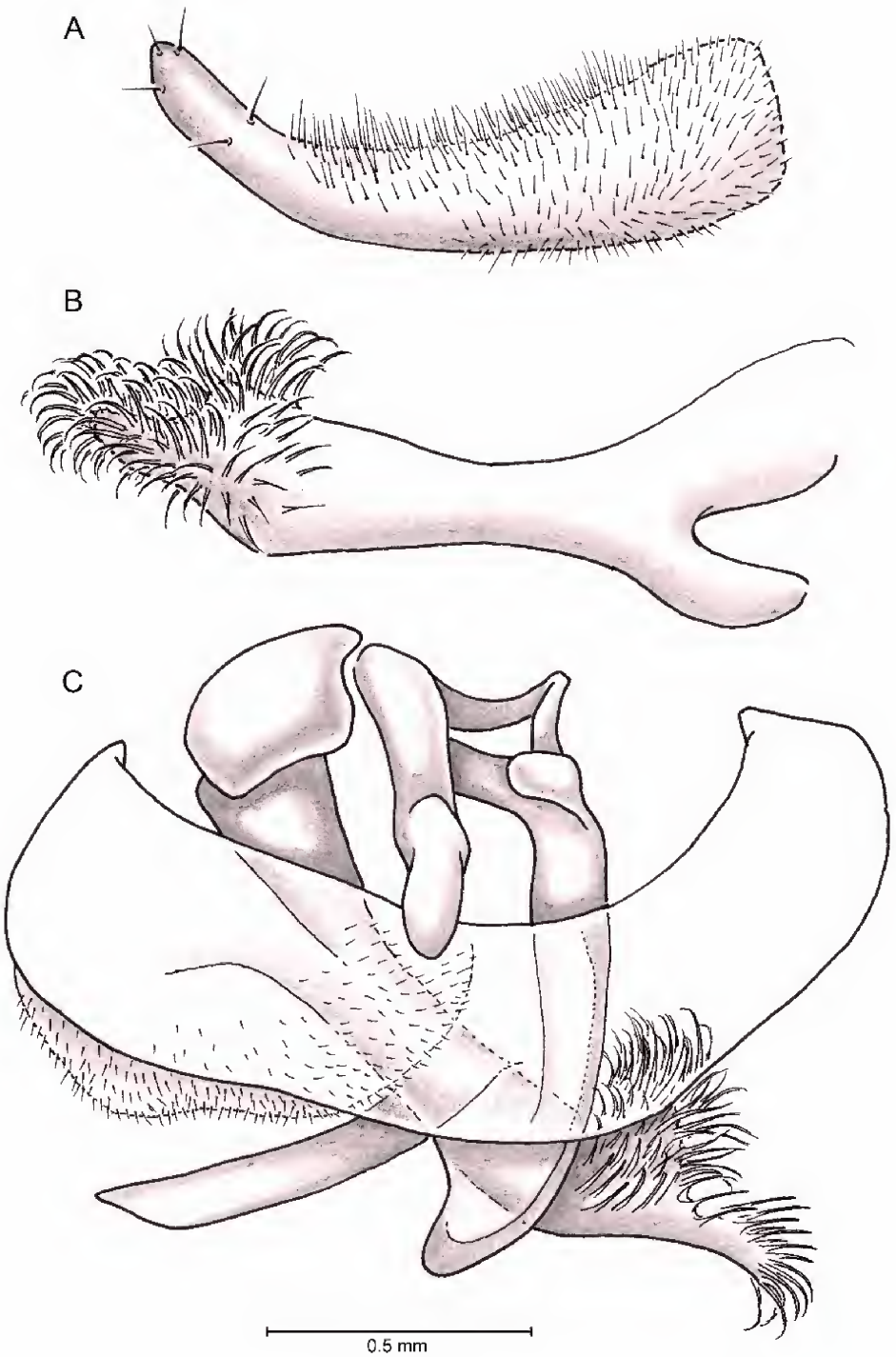

Fig. 7. Male terminalia of *Stenomicra brunnea* (all to the same scale). **A.** Left surstylus, lateral view. **B.** Aedeagus, lateral view. **C.** Hypandrium, aedeagus, and associated sclerites.

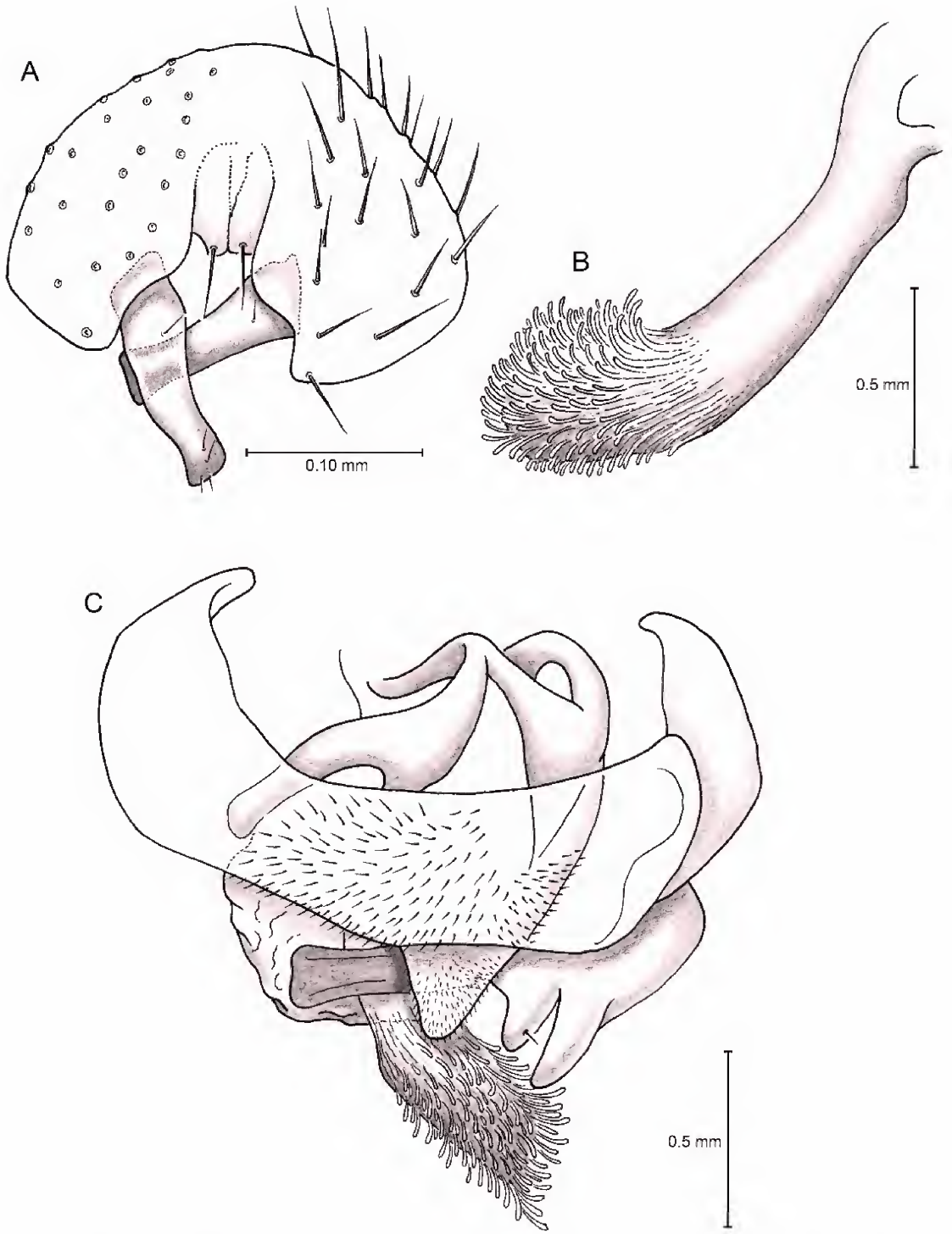

Fig. 8. Male terminalia of *Stenomicra castanea*. **A.** Epandrium with surstyli, posterior view. **B.** Aedeagus, lateral view. **C.** Hypandrium, aedeagus, and associated sclerites.

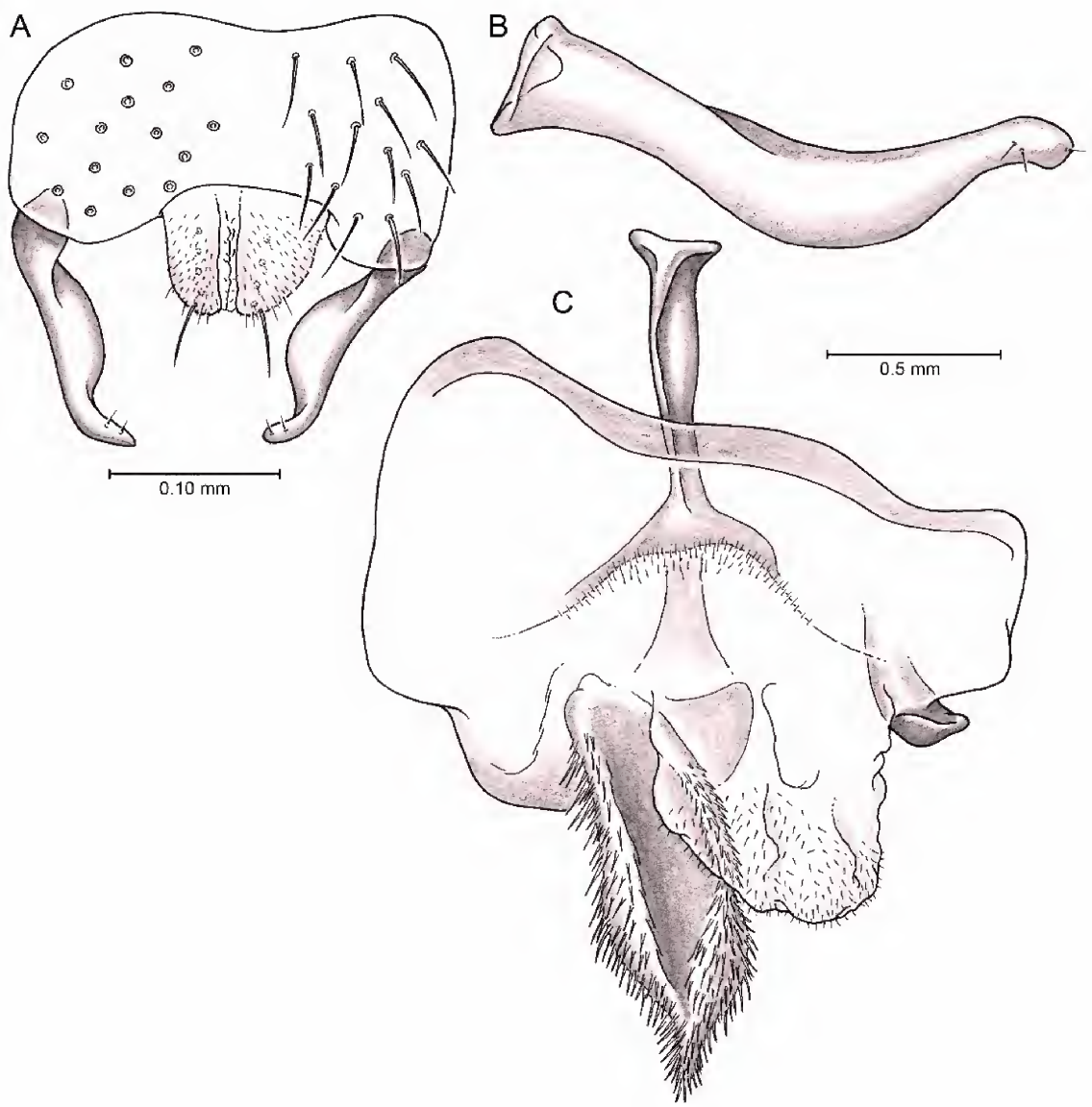

Fig. 9. Male terminalia of *Stenomicra pallida*. **A.** Epandrium and surstyli, posterior view. **B.** Left surstylus, lateral view. **C.** Hypandrium, aedeagus, aedeagal apodeme, and associated sclerites.

M_{1+2}; R_{2+3} long; R_{4+5} ends at tip of wing, tip of wing slightly and bluntly pointed; small basal veins (bm-cu, CuA_2) lost; cross veins very close together (L r-m / distance between r-m and m-cu = 0.43); alula, anal lobe, vein A_1+CuA_1 absent.

Abdomen: Slender, tergites fully formed, tVI in male very short, ca. 0.5× length of tV (tVI longer in female). Male genitalia with simple, crescent-shaped surstylus (no lobes or teeth), apex acute, subapically with 5 fine setae; aedeagus membranous, fusiform in overal shape, with fine, curved tip, distal half covered with dense microtrichia.

Types: Holotype, male (no. 30, dissected), FIJI: **Taveuni Island**, Cakadrove Prov., Devo Peak Radio Tower, Malaise in rain forest, 13.XII–20.XII.02, FJ-8, M. Irwin, E. Schlinger, M. Tokota'a, 179°58′E, 16°51′S, 1200 m. Paratypes: 1 male, 5.6 km SE Tavuki Village,

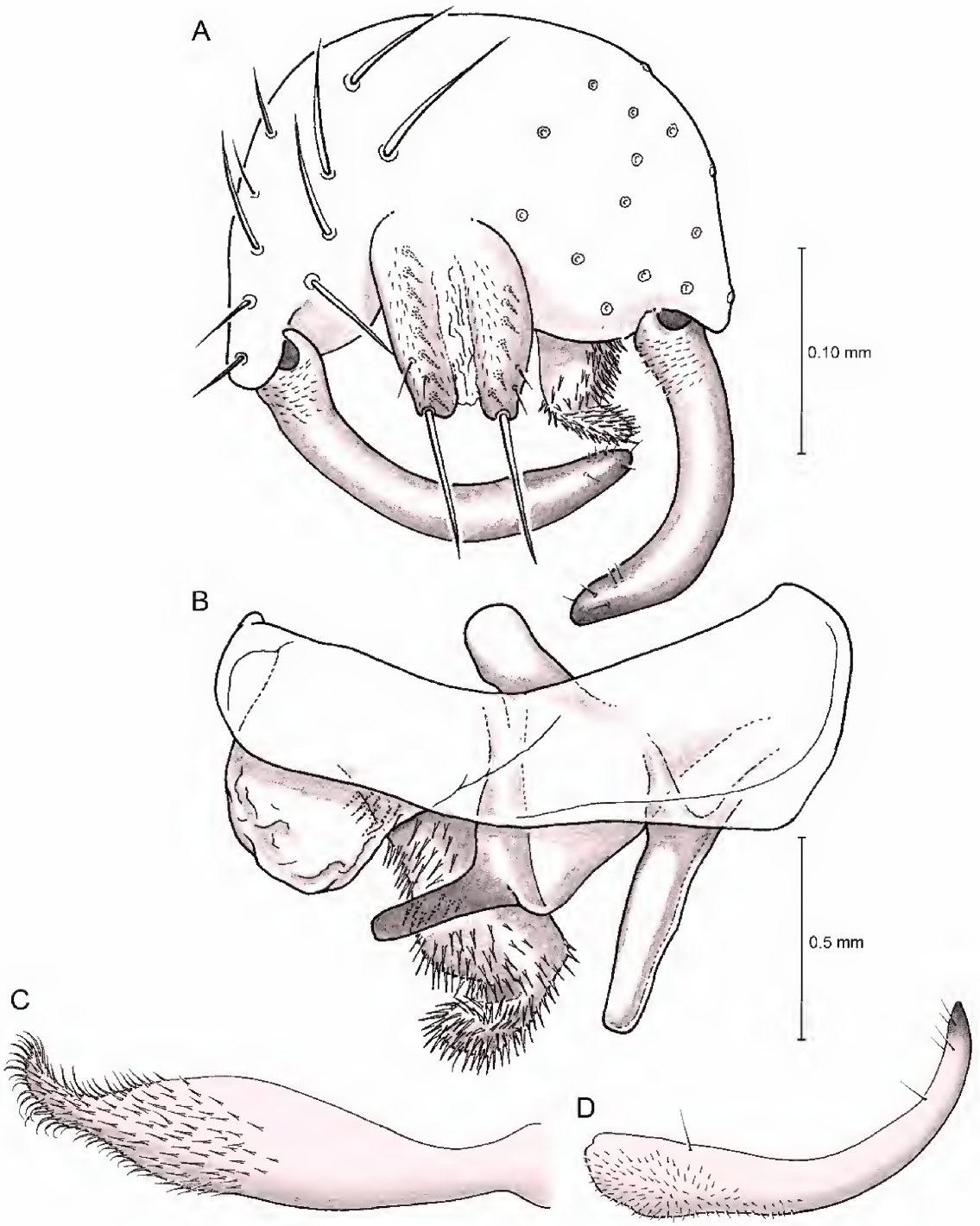

Fig. 10. Male terminalia of *Stenomicra sylpha* (**A, B**) and *S. tokotaai* (**C, D**). **A.** Epandrium and surstyli, posterior view. **B.** Hypandrium, aedeagus, and associated structures. **C.** Aedeagus, lateral view. **D.** Left surstylus, lateral view.

Devo Peak, 1187 m, 30.VI–14.VIII.2004, Malaise 1, Schlinger, M. Tokota'a, 16.843°S, 179.966°W, FBA150901, dissected (no. 58); 1 male, Tavuki Village, Mt. Devo, 592 m, 4–31.VII. 2004, Malaise 4, E.I. Schlinger, M. Tokota'a, 16.837°S, 179.973°W, FBA151944, dissected (no. 67); 2 females, same data as holotype (no. 35); another female: **Vanua Levu**, Bua Prov., Batiqera Range, 8 km NW Kilaka Village, 146 m. 28.VI–21.VII.2004, Malaise 1, Schlinger, Tokota'a, 16.815S, 178.986E, FBA 104918. Holotype and some paratypes in BPBM; some paratypes in AMNH.

ETYMOLOGY: Patronym in honor of Mr. Moala Tokota'a, Fiji outrigger athlete and an instrumental person in the efforts to survey the biodiversity of his country.

COMMENTS: *Stenomicra tokotaai* grossly resembles the original description of *S. australis* Malloch (type locality: Innisfail, Queensland) in body coloration and frontal setation; unfortunately, the holotype of *S. australis* in the Natural History Museum (NHM), London, has been almost entirely destroyed, and only a wing remains on the original point. Both species apparently have two pairs of reclinates situated far anteriad, with the anterior pair being very small. However, there are significant differences: The wing of *S. tokotaai* is nearly fusiform in shape, with a blunt point at the apex, without an anal lobe or anal vein, and the cross veins are situated far more basally and closer together than is figured in Malloch (1927) for *S. australis*. Also, the coloration of the terminal tergites of the female abdomen differs considerably. Lastly, the male genitalia of *tokotaai* have the surstyli much more curved and less sclerotized, and the aedeagus is fusiform in shape (not cylindrical).

Stenomicra xoutha, new species

Figures 4, 11

DIAGNOSIS: Frons whitish, pollinose; scutum and scutellum very light brown/dark ochre, lighter (yellow) between dorsocentrals; tergites I–IV light brown. Dorsal portion of pleura light brown. Pair of anterior fronto-orbital setae minute, very light and barely detectable. Arista with 4 dorsal and 2 dorsal branches. Wing hyaline. Best distinguished from similar *Stenomicra* by male terminalia: cerci without pair of long, thick setae on ventroapical margins; aedeagus curved, apex brushlike; surstylus curved, apex acute, base broad and with dense, long setulae on inner margin.

TYPES: Holotype, male (dissected, no. 56), FIJI: **Viti Levu**: Naitasiri Prov., Nakobalevu Mt., FJ-4, 22.IX–9.X.02, 178°25′E, 18°03′S, rainforest, M. Irwin, E. Schlinger, M. Tokota'a, Malaise trap 340 m., FBA 013231. ThL = 1.32 mm; wing W/L = 0.40; L r-m / L between r-m and m-cu L r-m / L between r-m and m-cu = 0.33. In BPBM.

In addition, there is a series of seven females that are tentatively being assigned to *S. xoutha*, on the basis of coloration, minute fronto-orbitals, and aristal branches. Four females are from the type locality (Nakobalevu, 2 collected at 340 m, other 2 not specified: nos. FBA013232, 013233, 210864, 210865). A further two females are also from Viti Levu, Naitasiri Prov.: 1 female 3.2 km E Navsi Vlg., Veilaselase Track, 1020 m, 19.IV–14.V.2004, Malaise 2, Schlinger, Tokota'a, 17.624°S, 178.009°E, FBA 155656. 1 female: Naitasiri Prov., Eteni, Navai, Malaise trap, 6.VI–15.VII.2003, FJ-11B, 700 m, E. Schlinger, M. Irwin, M. Tokota'a, 177°59′E, 17°37′S, FBA013857.

Lastly, there are two females from two other islands that are similar to the above females. 1 female: **Vanua Levu**, Bua Prov., Batiqere Range, 6 km NW Kilaka Village, 98 m, 15–24.VI.2004, Malaise 5, Schlinger and Tokota'a. 16.807°S, 178.991°E, FBA161196. 1 female: **Taveuni**, Cakadrove Prov. Devo Peak Radio Tower, Malaise in rainforest, 10.X–17.X.02, FJ-8, M. Irwin, E. Schlinger, M. Tokota'a, 179°58′E, 16°51′S, 1200 m, FBA018304.

ETYMOLOGY: From the Greek, *xouthos*, meaning yellowish brown, in reference to the color of the scutum and scutellum.

Non-*ariela* complex *Stenomicra*s

Stenomicra distincta, new species

Figures 2–5, 12

DIAGNOSIS: Distinctive species with bold, contrasting blackish-brown and light yellow markings: ocellar triangle, scutum, scutellum, postnotum, anepisternum, tIV+V (males; in

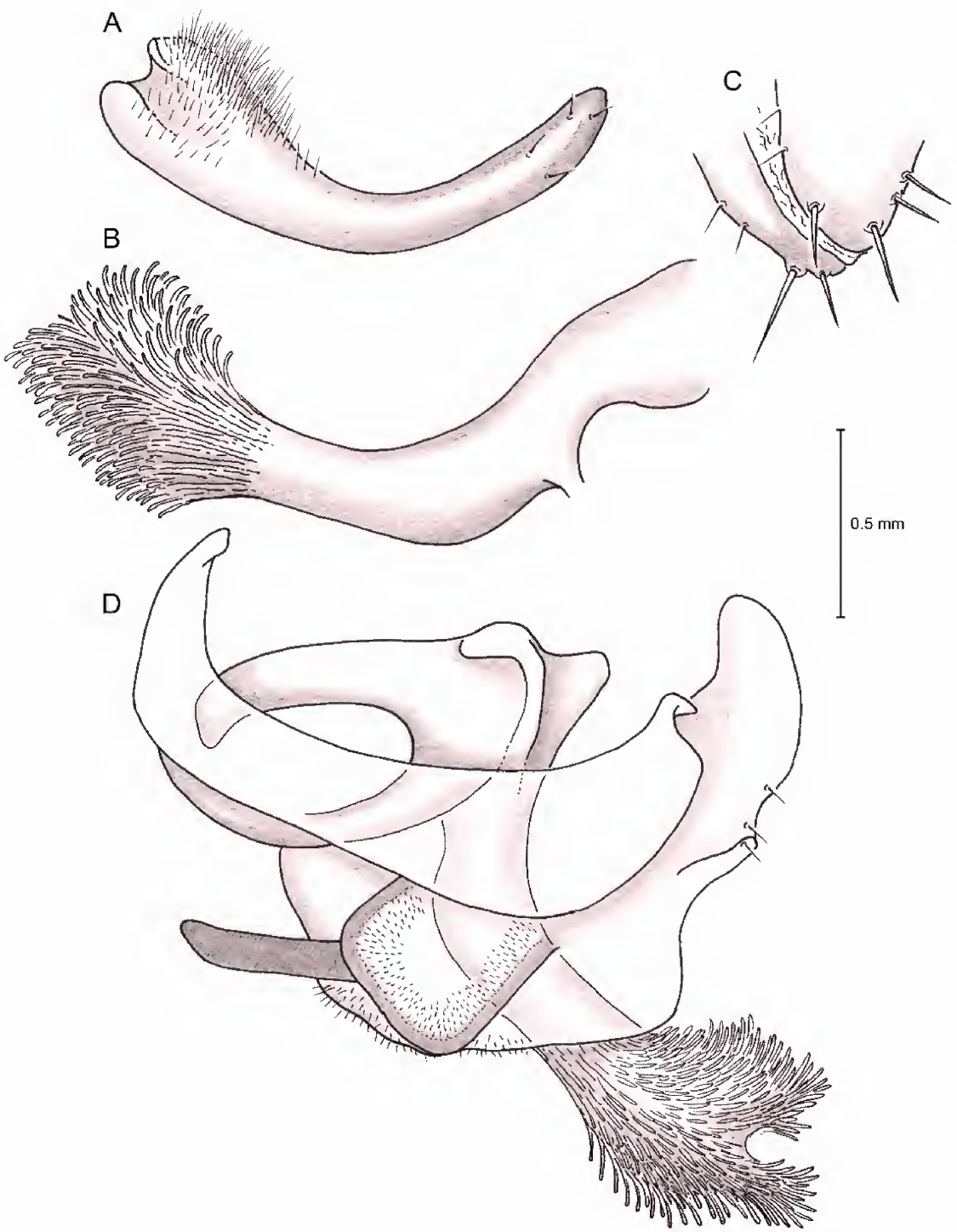

Fig. 11. Male terminalia of *Stenomicra xoutha*. **A.** Left surstylus, lateral view. **B.** Aedeagus, lateral view. **C.** Ventral portions of cerci. **D.** Hypandrium, aedeagus, and associated structures. All to the same scale.

females also tVIII+IX) dark blackish brown, rest of body light yellowish. Wing entirely hyaline. Cerci with two pairs of large, stiff setae ventrally; distiphallus long, slender.

DESCRIPTION: ThL = 0.53 mm. *Body coloration*: Frons, face, cheeks, postgenae, proboscis very light yellow, only dark area of head is blackish ocellar triangle. Eyes light purple. Scape and pedicel light orange; arista coppery brown. Scutum, scutellum, postnotum, most of anepisternum and anterior portion of anepimeron blackish brown; rest of thorax whitish to yellow. Mesosternum yellow. Legs with diffuse yellow on femora, other podomeres whitish. Wing completely hyaline; halter white. Abdominal tergites mostly light to dark yellow, except tIV, V, VIII (epandrium) in males dark brown; these three tergites plus IX dark brown in females. Setae on frons mostly light yellow; pseudovibrissae, oral setae, and mesonotal setae brown. Setae and setulae on legs and ventral surface of thorax very light yellow.

Head: Chaetotaxy and other features similar to that of *Stenomicra tokotaai*, with exceptions as follows: Vertical setae shorter; arista with four dorsal and two ventral branches. Pseudovibrissae on facial protuberance projecting forward and curved upward; bases separated by distance approximately 2× diameter of basal sockets. Oral margin ventral to pseudovibrissa with row of four setae, projecting laterad and curved slightly downward.

Thorax: Scutum with single, incomplete row of 6–7 long, fine acrostichals; two pairs larger dorsocentral setae (finer setulae anterior to these), anterior dc ca. 0.7× length of posterior dc. Katepisternum with one long seta near dorsal margin. Wing hyaline, fairly broad (W/L = 0.23); cross veins not particularly close (L r-m / distance from r-m to m-cu = 0.23); wing tip rounded, alula virtually lost, vein A_1+CuA_2 reduced to short spur but present. Abdominal tergite VI of male approx. equal to length of tVII; abdominal apex of female less tapered. Male genitalia: Epandrium deep, setose, with ventromedial notch for cerci; cerci lightly sclerotized on ventral portion only (dorsal portion membranous), with 7 spicule-like setae on each lobe, ventral margin with 2 long, stiff setae pointed ventrad. Surstylus simple, with blunt, sclerotized apex; slender, length ca. 4× greatest width. Hypandrium slightly asymmetrical, with right side slightly larger. Aedeagus typically complex, with right, spiculed, membranous lobe to which is connected a sclerotized strip; a median, membranous lobe with scales; ventral lobe (distiphallus) that is slender, pointed, spicules at apex. Left paraphysis (?) present, slightly sclerotized, as figured.

TYPES: Holotype, male: Fiji: **Viti Levu**, VII.10.08, Savura Topline Rd, 150 m, in rolled leaves of wild ginger, D. Grimaldi (no. 36: not dissected). In AMNH. Paratypes: 1 female (no. 37) same data as holotype. 1 male: **Viti Levu**, VII.11.08, 18°02′15″S, 178°10′03″E, in rolled banana leaf, 100 m, D. Grimaldi coll. (no. 38: dissected).

ETYMOLOGY: Fom the Latin *distincta* (fem., "different, separate"), for the distinct coloration.

Stenomicra distinctipennis (Collin), new combination

Figures 1, 4, 5, 13

Diadelops distinctipennis Collin, 1951: 41.
Stenomicra fascipennis Malloch, 1927: Sabrosky, 1965 (as probable synonym).

DIAGNOSIS: Easily distinguished from other species of periscelidids in Fiji by the slender, gray body; infuscate wing with whitish bands over the cross veins and at base, and the setae on the head (inner verticals minute, anterior fronto-orbitals nearly lateral to posterior FOs). Distinguished best from other species in the *S. fascipennis* species complex (see below) by the distinctive shape of the surstylus, which are strongly curved and have a setose lobe at base of inner margin.

DESCRIPTION: *Body coloration*: Frons, face, cheeks pollinose and yellowish, ocellar triangle brown; scape, pedicel, and basal flagellomere ochre. Eyes light pink. Scutum and scutellum brown with a layer of light bluish pollinosity; pollinosity heaviest as two paramedian vittae (specimen requires tilting under light for best observation). Dorsal portion of pleura (anepisternum, anepimeron) brown, remainder of pleura and most of legs light yellow (tarsomere 1 light brown). Abdominal tergites uniformly brown, including all of syntergosternite VII, tergites slightly lighter anteriad. Halter knob light brown. Wing with infuscation pattern as

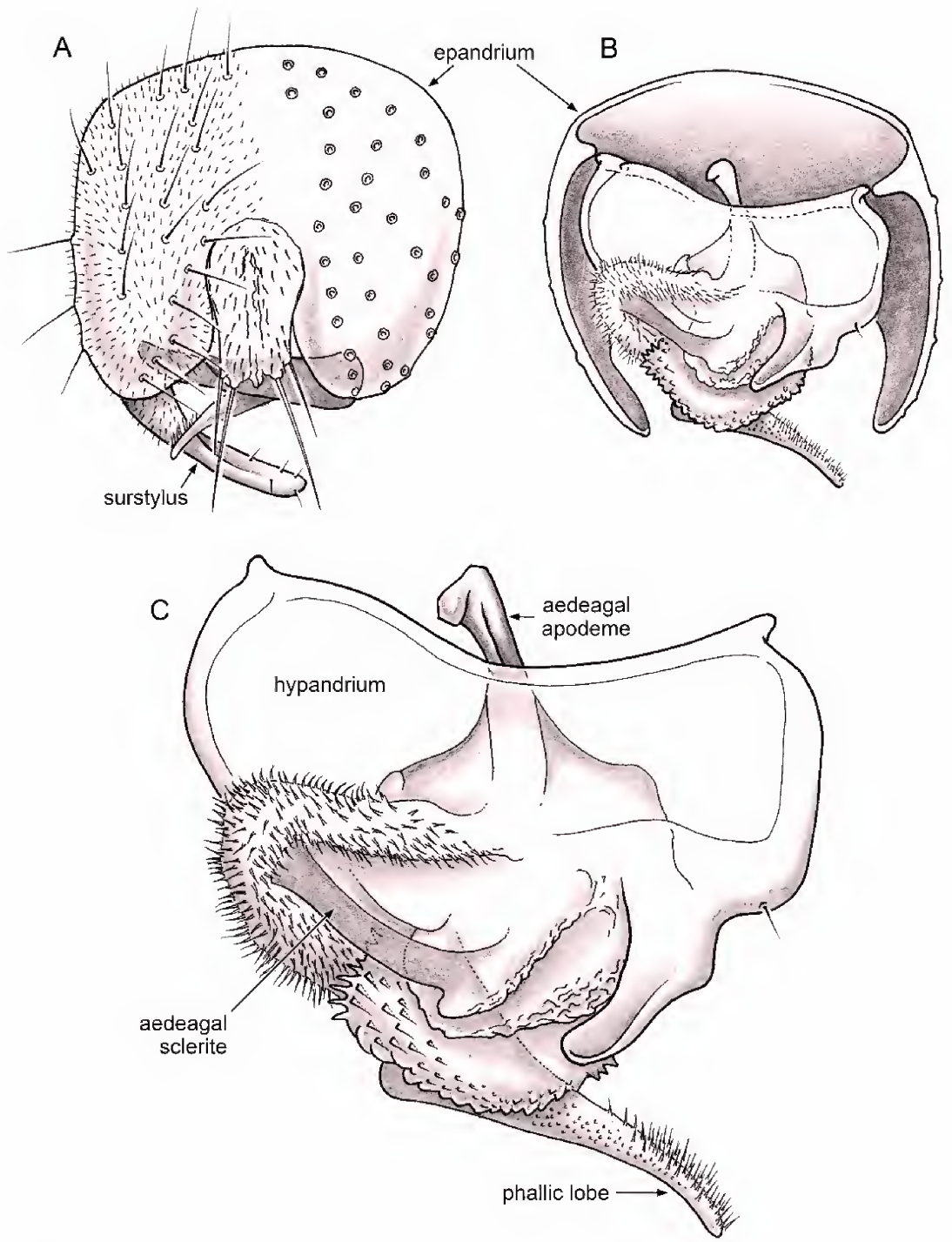

Fig. 12. Male terminalia of *Stenomicra distincta* (spcm. 38). **A.** Epandrial complex, posterior view. **B.** Epandrial complex, anterior view. **C.** Hypandrium, aedeagus, and aedeagal apodeme (anterior view). A and B to same scale.

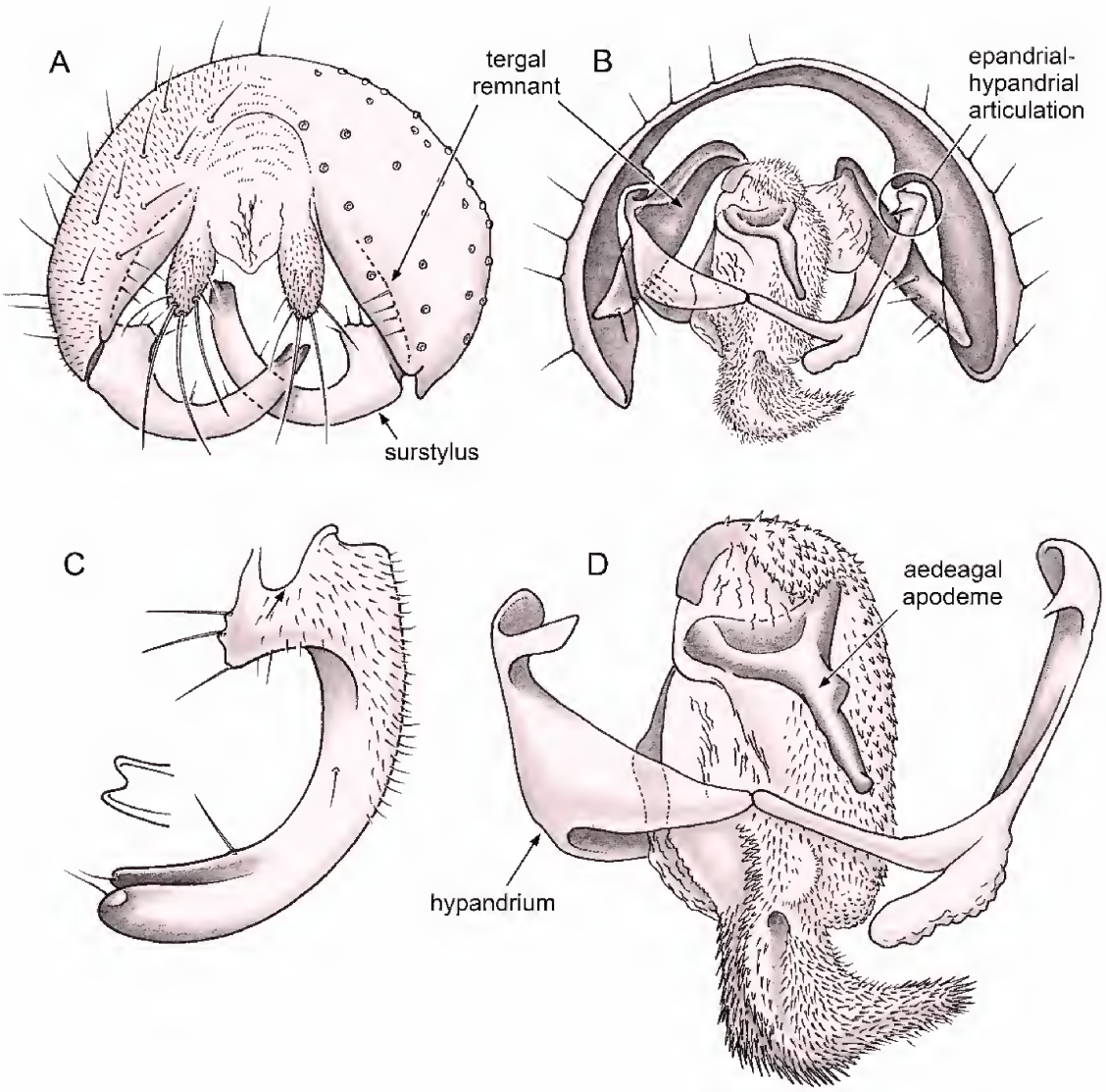

Fig. 13. Male terminalia of *Stenomicra distinctipennis* (Collin). **A.** Epandrial complex, posterior view. **B.** Epandrial complex with genitalia, anterior view. **C.** Surstylus (terminal view), showing apex in mesal view. **D.** Genitalia in anterior view (enlarged).

described below. Arista and dorsal setae of body coppery, setae on light cuticle (legs, pleura) are blond.

Head: greatest length in profile is oblique. Frons flat. Two pairs fronto-orbital setae present, setae long and fine: reclinates slightly posteromedial to proclinates, approximately equal in length. Fronto-orbitals lie near middle of frons at margin of eyes. Inner vertical setae minute, posterior to ocellar triangle; outer vertical setae large, divergent, slightly shorter than fronto-orbitals. Eye is an irregular oblong in lateral view; posterior margin flat to slightly concave, anterior margin convex. Eye with dense but short, fine interfacetal setulae. Cheek deep, greatest depth ca. 0.5× greatest depth of eye. Face with protuberance in middle, ventral portion of face sloping posteroventrad. Pair of large, divergent, upturned pseudovibrissae at apex of protuberance; two pairs downturned setae ventral to pseudovibrissae, lengths approxi-

mately equal to pseudovibrissae. Maxillary palps reduced to minute papillae; labellum broad, in well-preserved specimens where labella fully unfolded, lateral margins of labella with dense fringe of fine lobes (pseudotracheal extensions?). Antenna with pedicel caplike, having inner surface ca. 2×length of lateral surface; pedicel with single dorsal seta and with dorsolateral seam. Basal flagellomeres divergent, each with minute tuft of setulae at apex. Arista with long branches: 4 dorsal, 2 ventral (besides terminal fork).

Thorax: Scutum flat, not domed or significantly convex; with short, single row 4–5 acrostichal setulae; two larger pairs dorsocentrals, posteriormost pair long and fine; dorsocentrals decreased in size anteriad. Scutellum with single pair long (apical) setae. Thorax with 2 notopleural setae; 1 long, erect katepisternal; no postpronotals. Wing with infuscation pattern: along middle of wing with infuscation, interrupted by incomplete whitish bands over cross veins dm-cu and r-m, and at base; slight whitish area preapically over tip of R_{2+3}. Cross veins dm-cu and r-m at nearly right angle to longitudinal veins; distance between these cross veins 2.3× length of cross vein dm-cu. Greatest width of wing 0.37 the length (from wing tip to level of cross vein h).

Abdomen: Epandrium hemispherical, with short, stiff setae over much of surface; inner lateral walls with pair of sclerites (tergal remnants?), to which articulate dorsal arms of hypandrium. Dorsal portion of cerci membranous, with lightly sclerotized ventral, pendulous lobes; ventral tips of cerci with 2–3 long, fine setae. Sursylus distinctive: strongly curved, crescent shaped, apex lightly sclerotized, scooped shaped, apical margin concave; base of surstylus with large lobe on mesal surface, having 3 fine setae on apex of lobe. Hypandrium divided, asymmetrical (as figured), apex of arms articulate dorsally with condyle on inner wall of epandrium and with "tergal remnants." Aedeagal apodeme reduced to paddlelike structure. Aedeagus bulbous, surface extensively spiculed, without sclerotized band/strip at apex; apex turned to right.

Types: Not specified by Collin (1951), material mentioned: Fiji: **Viti Levu**, Wainibokasi, 29.iii.49, B.A. O'Connor, on para grass (1 male); Viti Levu, Naduruloulou, viii.50, B.A. O'Connor, on para grass (7 males, 5 females). In NHM, London.

Material Examined: FIJI: **Viti Levu**: Serua Prov., Nambukelevu, 1.XII.85, W.W. Wirth (1, NMNH); Nandi, 0–100 m, 5.III.74, N.L.H. Krauss (6, NMNH; 1 male dissected [no. 26]); Naitairi Prov., Etnei, Novai, Malaise trap, 6.VI–15.VII.2003, FJ11B, 700 m, M. Irwin, E. Schlinger, M. Tokota'a, 177°59′E, 17°37′S, 1200 m (2 BPBM, 1 AMNH [1 male dissected, no. 25]); Sigatoka Sand Dunes N.P., Malaise 1.1 km SSW of Volivoli. 50 m, 23.IX–8.X.02, Schlinger, Tokota'a, FJVL6b_M03_01 (1, AMNH). **Viti Levu**: Vuda Prov., Koroyanitu EcoPark, Mt. Evans, 1 km E. Abaca, Kokabula Trail: −17.667°, 177.55°, 800 m, 12.X–19.X.2002, Malaise MO1, M. Tokota'a, FBA202858 (male); 17°40′S, 177°35′E, 19–26.X.02, Malaise, E. Schlinger and M. Tokota'a, FJVL02, MO1.64 FBA085404, 085405 (2 males). Naitasiri Prov., 4.8 km N Veisari Stlmt., log rd. to Waivudawa, 300 m, 12.XII.02–3.I.03, Malaise 1, Schlinger and Tokota'a, 18.075°S, 178.362°E, FBA178233 (1 female). **Taveuni**: Cakadrove Prov., 5.6 km SE of Tavuki Village, Malaise, rainforest 31.X–4.XI.02, Schlinger, Tokota'a FJTA8a_MO1_06, −16.843°, −179.965°, 1187 m, FBA056962 (1 female); Cakadrove Prov., 3.2 km NW Lavena Vlg., Mt. Koronibuabua, 234 m, 24.X.03–4.I.04, Malaise 2, Schlinger and Tokota'a, 16.855°S, 179.891°W, FBA169952 (1 female).

Comments: This species belongs to a complex of closely related (cryptic/sibling) species that have traditionally been grouped under *S. fascipennis* (Sabrosky, 1965), known from Madagscar, parts of Africa, Australia, India, and other parts of Southeast Asia to throughout the Pacific from Indonesia to Hawaii and Fiji. The complex was discovered by dissecting the genitalia of males from throughout the putative range of *fascipennis* (i.e., material reported in Sabrosky, 1965) and comparing these with details of the wings and other features. A separate paper will be published that revises *S.* "*fascipennis*." The complex is distinguished from other *Stenomicra* by the presence of a light brown infuscation along the middle of the wing, interrupted by faint, white, transverse bands (one at base, one each over cross veins r-m and dm-cu). The *fascipennis* complex is also

distinguished on the basis of the following combination of external features: anterior (proclinate) fronto-orbital seta large, only slightly smaller than posterior (reclinate) FOS; inner vertical setae proclinate but minute, ca. 0.3× size of outer verticals; scutum brown, with longitudinal strip of bluish pollinosity; pleura with light brown stripe; halter knob light brown; abdominal tergites that are almost entirely brown. Species differ little in chaetotaxy, body proportions and coloration, so it is easy to understand how Sabrosky (1965) did not distinguish the geographic trends in variation. Differences in proportions of wing veins and wing infuscation patterns are subtle but consistent, and the most substantial differences are in the male terminalia. The original description and drawing of the wing by Collin is detailed and very accurate; the terminalia were not illustrated.

Genus *Cyamops* Melander

Cyamops Melander, 1913: 291. Type species: *C. nebulosus* Melander, by original designation

Diagnosis: Small, dark-bodied flies with broader wings; possessing the following combination of features that distinguish the genus from *Stenomicra* and *Stenocyamops*: antero-ventral margins of eyes closely approximated, with facets in this area distinctly enlarged; fronto-orbital plates below FO setae silvery microtomentose; inner vertical setae absent; often with pair of inner fronto-orbital setae between pair of outer FOs; acrostichal setulae in two rows; anal lobe of wing, vein A_1+CuA_2, and alula present; anepisternum with silvery microtomentum, occasionally with several of fine setae on posterior margin; male genitalia (surstyli, hypandrium) distinctly asymmetrical.

Comments: This is a worldwide, monophyletic genus of 28 species that has been well documented (Baptista and Mathis, 1994 [revision New World species]; Khoo, 1984 [Australian species]; Baptista and Mathis, 2000 [review of world species]).

Cyamops fiji Baptista and Mathis

Figures 1, 2, 15

C. fiji Baptista and Mathis, 2000: 493.

Diagnosis: Separated from other species of the genus as based on details of male terminalia and female described in Baptista and Mathis (2000): unique shape of right surstylus, sternites VI+VII incompletely fused, 4 spermathecae. Also: peristomal setae on face, face with slight vertical ridge; arista without bifurcate branches; distal halves of femora dark brown; forefemur without ctenidium; mesocoxa without comb of setae; male terminalia with left surstylus short, length 3.3× greatest width, as figured.

Description: A detailed description is provided in Baptista and Mathis (2000).

Material Examined: According to the original description, 18 males and 18 females were collected by N.H.L. Krauss, March 1981 on **Viti Levu**, 0–200 m, in Lami (immediately west of Suva). Several specimens from the type series were examined for this study. Other specimens examined: **Viti Levu**: Nakobalevu Mtn., 12.III–24.III.03, 340 m, FJ40D, Irwin, Schlinger, Tokota'a (1 male, dissected: no. 61); ibid. FJ-40 FBA026387 (1 male). Naitasiri Prov., 4.8 km N Veisari Stlmt., log rd to Waivudawa, 300 m, 12.XI–3.I.03, Malaise 1, Schlinger and Tokota'a, 18.075°S, 178.362°E, FBA 178241 (1 male); Naitasiri Prov., Nakabalevu logging road, 17.III–9.IV.2003, Malaise trap no. 1, E. Schlinger and M. Tokota'a, FBA210869 (male).

Cyamops femobrunneus, new species

Figure 14

Diagnosis: Face with peristomal setae and well-developed vertical ridge; arista without bifurcate branches or at best with 3 minute ones near bases of proximal branches; femora almost entirely light brown; forefemur without ctenidium, mesocoxa without small comb of thick setae on posterior margin; male terminalia with left surstylus long, curved, total length 4.8× greatest width.

Description: ThL = 1.81 mm (holotype). *Body coloration:* Head mostly dark brown, velvety black within and immediately around ocellar triangle, ocelli light; velvety brown in middle of frons; dorsal portion of fronto-orbital plates lighter, shiny brown, anterior portion of FOPs with silvery microtomentum.

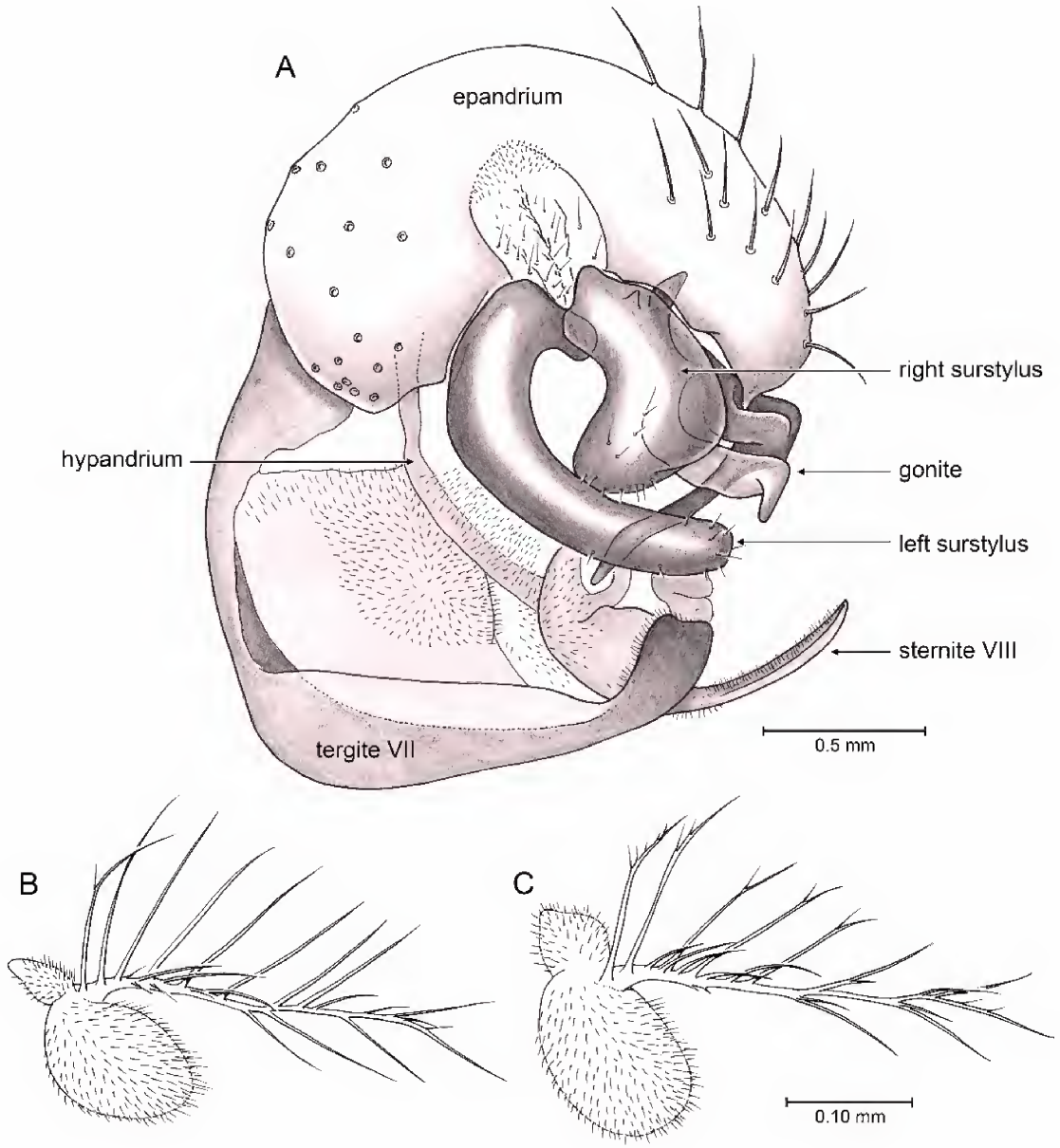

Fig. 14. Structures of Fiji *Cyamops* spp. **A.** Male terminalia (posterior view) of *Cyamops femobrunneus*. **B, C.** Aristae of *C. femobrunneus* (B) and *C. femoctenidius* (C).

Antenna with scape, pedicel, basal flagellomere yellowish. Face yellowish, with slight silvery microtomentum beneath antennae, thick microtomentumon narrow strips of cheeks beneath eyes; middle of face with light bluish microtomentum. Eyes pink. Clypeus dark brown, mouthparts very light yellow. Postocciput dark brown. Thorax entirely dark brown (scutum, scutellum, pleura). Pleura with very slight microtomentum. Forecoxae light, anterior surface with thick silvery microtomentum; other coxae light brown. All femora brown, with proximal end lighter; tibiae and tarsi yellowish, distal tarsomere dark brown. Halter light brown; wings hyaline (no patterns), very slightly infuscate.

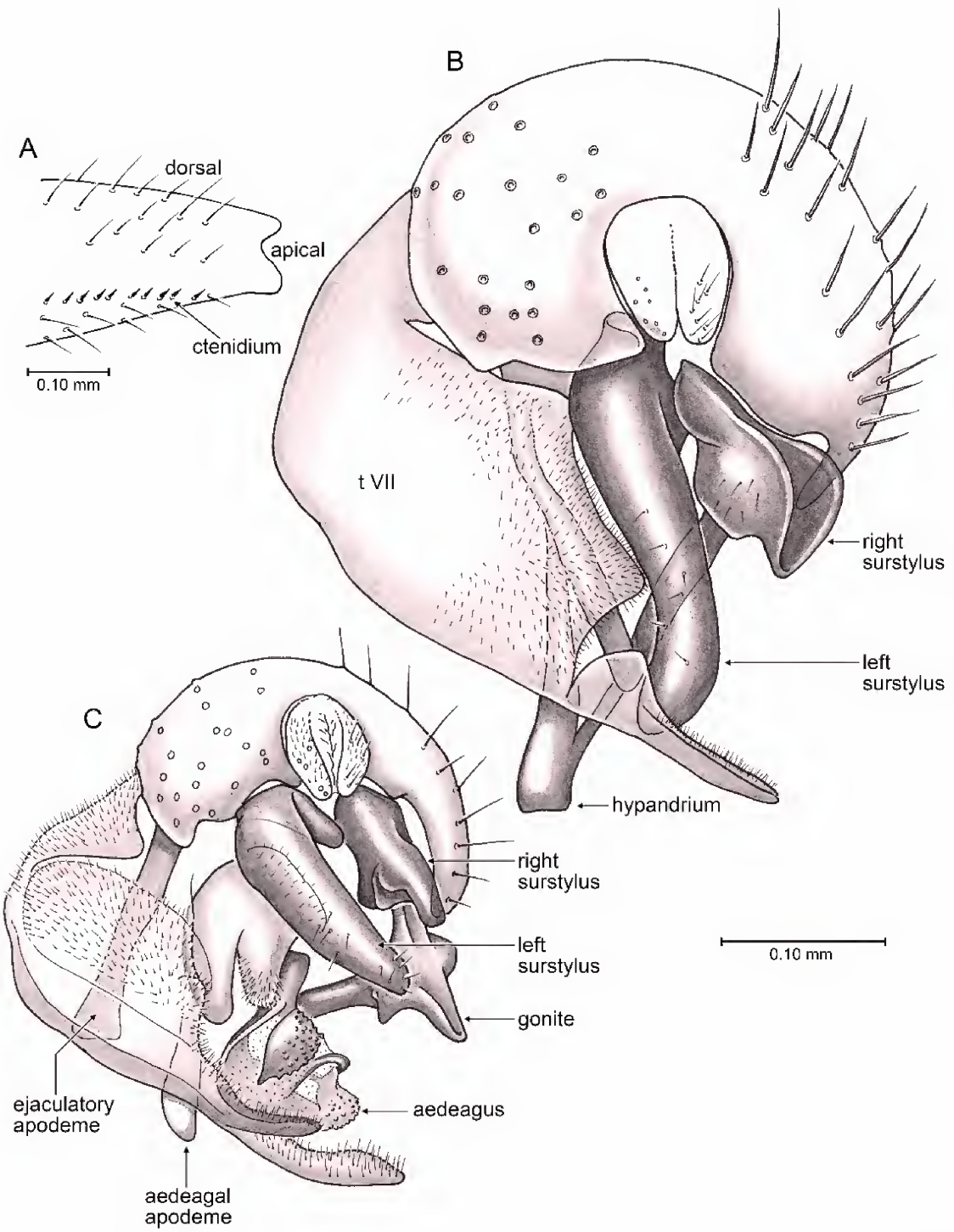

Fig. 15. Structures of Fiji *Cyamops* spp. **A.** Forefemoral ctenidium of *C. femoctenidius*. **B.** Male terminalia of *C. femoctenidius* (posterior view). **C.** Male terminalia of *C. fiji* (posterolateral view).

Abdominal tergites lighter brown than scutum and scutellum, except epandrium and tVII (which are darker); sternites light brown.

Head: Frons with large pair of proclinate orbital setae, lying immediately lateral to pair of reclinates, which are slightly shorter. Anterior to reclinate is row of minute ca. 6 reclinate setulae. No ocellar, postocellar, or inner vertical setae present; outer verticals large, lateroclinate; postocellars present as minute pair of setulae. Eye with large facets on anterior surface, at margins where face is pinched; these facets ca. 2× diameter of other facets. Eyes bare, no setulae between facets. Face very narrow between eye margins, width less than 2× facet diameter; face with narrow, shallow, vertical carina that is polished brown to yellow. Pair of pseudovibrissae just ventral to narrowest portion of face, pointed dorsad, fine, lengths ca. 4× diameter of largest eye facets. Row of approximately 8 long parafacial setae (alterating with minute setula), 4 pairs on face. Antenna with pedicel cuplike, ventral portion of rim with several long setae; basal flagellomere projecting forward (not downward). Arista without small basal article, plumose, with 7 long dorsal branches and 2 shorter ventral branches (towards apex) (not including apical fork), ca. 7 short mesal branches; dorsal branches either without small secondary branches (though 2–3 branches have slightly thickened areas in middle and are slightly bent, suggesting loss of secondary branches) or there are at most 2 minute secondary branches on most proximal branches of arista. Cheek shallow, with ca. 4 setae; postgena with 3 stiff setae on each side. Clypeus very narrow, greatest width ca. 1/3 that of oral cavity. Palpi small; labellum with fringe of fine, light setae on lateral margins.

Thorax: Scutum with 2 short rows of long acrostichals, ca. 4 acrostichals per row. Three pairs strong dorsocentrals; anterior pair shortest, posterior pair longest; ca. 5 short, fine setae in row in front of anterior dc. Scutellum with two pairs of scutellar setae, posterior pair longer, ca. 1.3× length of anterior pair. Pleura with 2 thick, long notopleural setae, approximately equal in size; katepisternum with 2 setae, 1 thick and long, the other fine and ca. 0.5× the length. Thorax deepest at level of katepisternum and mesocoxa. Venter of thorax broad, with fore coxae well separated and mesosternite very broad. All setae on venter of thorax fine, none especially thick and stiff. Legs with few distinctive setae, except thick, black, long seta at apex of midtibia. Tarsomeres expanded in length distally; distal tarsomeres broad, flat, claws large, pulvilli large. Wing: Calypter with fringe of long, fine setae; vein C extends to apex of vein M, without humeral break and with faint Sc break; Sc long, seems to fuse apically with R_1; vein R_{2+3} very long, extended well past level of cross vein dm-cu, otherwise venation typical of *Cyamops*.

Abdomen: Short, length only slightly longer than that of thorax, slightly more narrow than thorax. Tergites and sclerites well developed, pleural membrane narrow. Epandrium heavily sclerotized, capsulelike, symmetrical, without long ventral lobes. Tergite VII asymmetrical, with apex (ventral to epandrium) blunt and sclerotized. Surstyli highly asymmetrical, left one long (length ca. 4.8× greatest width) and strongly curved; right one short and thick (as figured).

TYPES: Holotype, male: **Taveuni**: Cakaudrove Prov., 5.6 km SE Tavuki Vlg, Devo Peak 1187 m, 24–31.X.2002, Malaise 1, coll. E. Schlinger and M. Tokota'a, 16.843°S, 179.965°W, FBA 160268; paratypes, 4 males, same data, nos. FBA 020111, 160271, 149933 (dissected, no. 64), 160273. In BPBM and AMNH.

ETYMOLOGY: From femur and *brunnea* (L., "brown"), in reference to the entirely brown femora.

Cyamops femoctenidius, new species

Figure 15

DIAGNOSIS: Face with peristomal setae, slight vertical ridge; arista with 5–6 basal branches bifurcate (secondary branches very small); legs almost entirely yellow; forefemur with ctenidium, mesocoxa with small comb of thick setae on posterior margin; male terminalia with V-shaped hypandrium and aedeagal apodemes, left surstylus long, digitate, nearly straight, length 4.8× greatest width.

DESCRIPTION: Similar to the description given for *C. femobrunneus* with the exception of the following features: frons darker, more

extensive velvety black; pedicel and basal flagellomere with dark infuscation; proximal 4–5 dorsal branches of arista with small secondary branches; face with fewer parafacial setae, only 1 larger and 2 minute pairs; silvery microtomentum covers most of face and is more extensive on frontal orbital plates; microtomentum very sparse on fore coxae, midcoxae with row ("comb") of thick setae on posterior margin; legs virtually entirely yellow; forefemur with row of ca. 7 small, spinulelike setae on mesal surface of distal half; hind femur with ventral row ca. 10 fine, light, stiff setae; scutum deep, dark brown; anterior portion of male scutum with some polished areas; tergite VII of male with left lobe pointed (not blunt); left surstylus long and slender, but straight, right surstylus short and folded.

TYPES: Holotype, male: **Taveuni**: Cakaudrove Prov., 5.6 km SE Tavuki Vlg, Devo Peak 1187 m, 31.X–14.XI.2002, Malaise 1, coll. E. Schlinger and M. Tokota'a, 16.843°S, 179.965°W, FBA056938 (not dissected). Paratypes: 34 males, same locality, dates: 2–10.X.2002, 24–31.X.2002, 31.X–14.XI.2002, 14–21.XI.2002. 3 males dissected (nos. 60, 65, 66). Holotype and some paratypes in BPBM, other paratypes in AMNH.

ETYMOLOGY: From *femur* and *ctenidium*, in reference to the row of fine, thornlike setae (ctenidium) on the forefemur. This feature occurs sporadically in the genus.

COMMENTS: This species appears close to two Australian species and a Papuan one, based on the peristomal setae, forefemoral ctenidium, the bifurcate aristal branches, and some aspects of the male genitalia (Baptista and Mathis, 2000; Khoo, 1984). These are *Cyamops papuensis* Baptista and Mathis (from Papua New Guinea), *C. claudiensis* Khoo (from Queensland, Australia), and the comb of mescoxal setae is similar to that of *C. pectinatus* Khoo from eastern Australia.

Genus *Stenocyamops* Papp

Stenocyamops Papp et al., 2006: 216. Type species: *S. thaii* Papp, by original designation.

DIAGNOSIS (revised): Small flies with many of the distinctive features of *Stenomicra* (above), except these are slightly larger, more robust, dark bodied, and with the anepisternum having silvery microtomentum and a row of fine setae on posterior margin; vein A_1+CuA_2 present; anal lobe and alula present but highly reduced; male terminalia entirely symmetrical. The Fiji species have, in addition, a setose epandrium, cerci with a pair of pendulous ventral lobes, and a reduced hypandrium that is divided in the center.

COMMENTS: *Stenocyamops* was described on the basis of a unique male specimen collected in Doi Phuka National Park, Thailand (Papp et al., 2006), and the genus erected and named because of a morphology that is apparently transitional between *Stenomicra* and *Cyamops*. Here, four new, closely related species are added to this genus, suggesting that numerous species remain to be discovered throughout Asia and the Pacific. The Fiji species all seem closely related and perhaps are a monophyletic group, but until there is much better sampling throughout the Indo-Pacific it will be impossible to determine whether this is an endemic lineage.

Like *Cyamops*, the Fiji *Stenocyamops* are significantly larger (0.64–0.74 mm ThL), more robust, and darker than typical *Stenomicra*, which are smaller (0.53–0.60 mm ThL), slender, and flat, light-colored flies. Also, *Stenocyamops* possesses an anal lobe (though smaller than in *Cyamops*), which is virtually lost in *Stenomicra*, particularly in the subgenus *Podocera*. Many *Cyamops* possess a silvery-reflective microtomentum on the face, fronto-orbital plates, cheeks, and anepisternum, which *Stenocyamops* also have (though not on the face or FOPs; the Fiji species of *Stenocyamops* further have a row of fine setae on the posterior margin of the anepisternum; some *Cyamops* have a few setae in this region). *Stenocyamops* lacks several of the distinctive apomorphic features of *Cyamops*, namely: loss of the pair of inner vertical setae, possession of a pair of "inner" fronto-orbital setae, ventral margins of the eyes that are separated by only 3–4× the facet width, and male genitalia (surstyli, hypandrium) that are highly asymmetrical.

Stenocyamops shares some apomorphic features with *Stenomicra*, including the following: palps highly reduced; acrostichal setulae in a single (usually incomplete) row; single pair of scutellar setae (anterior pair reduced and sometimes lost in *Cyamops*); and

the small basal veins CuA_2 and bm-cu lost, rendering loss of cells cup and bm, respectively (in *S. thaii* CuA_2 is present). Also, *Stenomicra* shares with at least the Fiji *Stenocyamop*s (the description of *S. thaii* being insufficient to judge) a distinctive feature of the epandrium, wherein each lateral wall has a sclerite that articulates with a condyle on the lateral apex of the hypandrium. This pair of sclerites is probably an invagination of the posterolateral margins of the epandrium. The male genitalia of *Stenomicra* have an asymmefotrical hypandrium; that of *Stenocyamops* is symmetrical.

Stenocyamops luteus, new species

Figures 3, 4, 16, 17, 18, 21

DIAGNOSIS: Head and thorax almost entirely yellow; band of silvery microtomentum on cheeks very narrow, barely noticeable; 3–4 fine anepisternal setae; diffuse, light brown band across dorsal portion of pleura; tergites III, IV dark brown (sometimes VII + VIII in males, VII in females). Male genitalia with ventral lobes of cerci having apices rounded, not pointed; surstylus nearly straight (vs. scimitar shaped), with an apical tooth; hypandrium without pair of phragmata.

DESCRIPTION: ThL = 0.64 mm. Differing from *S. robustus* most obviously in body coloration: Head: Frons, face, clypeus and proboscis, vertex, postgena, and ground color of cheeks are bright yellow; area between ocelli dark brown, ocelli yellowish to red; eyes dark purplish; cheeks with very thin band of silvery-reflective microtomentum (slightly broader in females). Antennal pedicel and basal flagellomere light yellowish ochre; arista blackish brown. Thorax: Dorsal portion of scutum and scutellum entirely yellow, pleura mostly yellow, except light brown infuscation in ground color of anepisternum, dorsal portion of anepimeron, on katatergite and anatergite, and membrane at base of wing; anepisternum largely covered with silvery-reflective microtomentum; halter base slightly infuscate, bulb white. Legs light yellow, hind tarsi whitish. Wing hyaline. Abdomen with tergites III, IV dark brown in both sexes (sometimes also VII + VIII in males, and VII in females). Setae on head blackish brown; setae on thorax and legs lighter.

Other features similar to *S. robustus*, with differences as follows: Arista with 6–7 dorsal and 2 ventral branches (plus terminal fork); basal dorsal branches less crowded near base of aristal trunk, basal branches in line with more terminal ones. Pseudovibrissae stout, projecting forward and slightly divergent; bases separated by distance approximately equal to 2–3× diameter of base socket. Ventral to pseudovibrissae are 7 pairs oral setae; pair closest to pseudovibrissae project forward and curve slightly laterad; others project laterad and curve slightly ventrad. *Thorax*: much less deep than in *S. robusta*, depth approximately 0.7× the length in lateral view. (Meso-) scutum with single row of 5 long acrostichals, extended posteriad to level of dorsocentrals; anterior dorsocentral approximately 0.4× length of posterior one (supraalar seta absent?). Anepisternum with row of 3–4 fine setae on posterior margin. Coxae and mesosternum with pilosity of long, very fine, golden setae. Forefemur with long, fine, erect setae, row of 3–4 long, stiff setae on ventrolateral surface. Midtibia with long, stout, apical spur, length about 0.4× that of basitarsomere. Wing: hyaline, fairly broad (W/L = 0.41), with dorsal surface of vein R_1 without fine setae. Sc incomplete, cross veins br-m and dm-cu absent, other cross veins well separated (L r-m / distance between dr-m and dm-cu 0.20). Vein A_1+CuA_2 present, with an abrupt ending; vein A absent; alula highly reduced, anal lobe virtually lost. Male Terminalia: Paired structures and hypandrium symmetrical. Epandrium setulose, deep. Dorsal half of cerci extensive, membranous, with numerous microtrichia; cerci ventrally with pair of pendulous, setulose, rounded lobes, each bearing ca. 5 setae preapically. Surstylus setulose, nearly straight, curved slightly preapically, with setulae near apex and small apical tooth. Hypandrium reduced into two lateral lobes; median portion narrow, with fine gap; no phragmata. Aedeagus short, bulbous, spiculed, having several lightly sclerotized strips (as figured). Female terminalia: Tergite VI simple, not fused to sternite, with pair of sternites near lateral margin; sclerites

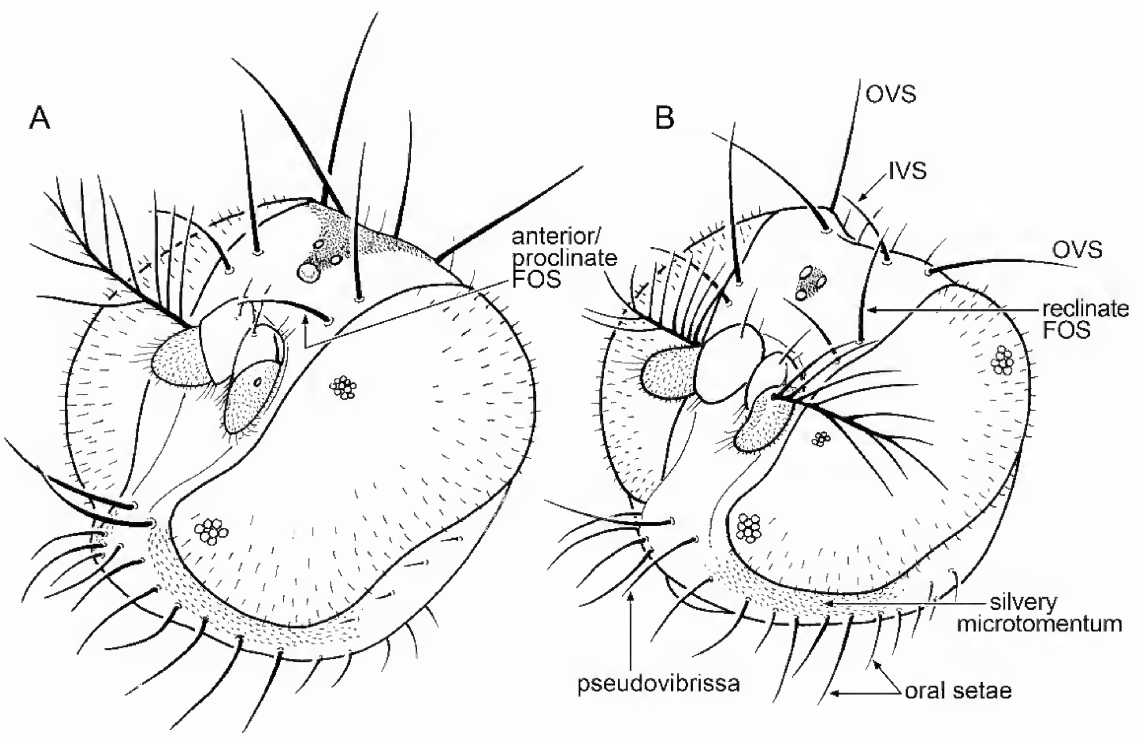

Fig. 16. Heads of Fiji *Stenocyamops*, oblique frontal views. **A.** *S. robustus* (spcm. 28). **B.** *S. luteus* (spcm. 29). To same scale. Differentiation in facet size is modest, and silvery microtomentum is restricted to the cheeks.

of segment VII fused into syntergosternite, bearing pair of lateral spiracles; tVIII small, narrow. Two spermathecae, ovoid, not spherical; heavily sclerotized; lying beneath level where tVI and VII meet.

TYPES: Holotype, male (not dissected), **Viti Levu**: VII.11.08, Namosi Rd., 200 m., 18°06′11″S, 178°10′29″E, in rolled banana leaves, D. Grimaldi coll. In AMNH. Paratypes: **Viti Levu**, VII.9.08, Nakobalevu Rd., 394 m., 18°03′31″S, 178°24′55″E, rolled leaves, D. Grimaldi, 2 females (one numbered, no. 34), 2 males (no. 41, dissected). **Vanua Levu**: VII.9.08, road up Mt. Ndulaikoro, 1000 m, in rolled leaves wild ginger, D. Grimaldi (2 males); VII.2.08, 163°2′21″S, 179°32′50″E, 402 m, D. Grimaldi, in rolled banana leaves. In AMNH. **Taveuni**: Cakadrove Prov., 5.6 km SE of Tavuki Village, Malaise, rainforest 31.X–14.XI.02, Schlinger & Tokota'a FJTA8a_MO1_06, −16.843°, −179.965°, 1187 m, FBA056963 (female). In BPBM.

ETYMOLOGY: From the Latin, *luteus*, for "yellow."

Stenocyamops pseudoluteus, new species

Figure 19

DIAGNOSIS: Silvery microtomentum on cheeks very slight; scutum and most of notum yellowish ochre; abdominal tergites almost entirely black-brown. Male genitalia with pointed, sclerotized ventral lobes of cercus; surstylus scimitar shaped, with preapical setulae; hypandrium with pair of broad, flat phragmata having fringed posterior margin.

DESCRIPTION: ThL = 0.66 mm. Coloration, setation, and detailed structure very similar to that of *S. vittatus*, except as following: silvery microtomentum of cheeks is slight, not extending to face (slightly better developed in female); eyes dark red; scutum entirely ochre, without dark brown central area; acrostichals in single row of 4–5 fine setulae; anepisternum with row of 3–4 fine setae on posterior margin; anepimeron only slightly infuscate. Abdominal tergites almost entirely dark black-brown. Male terminalia:

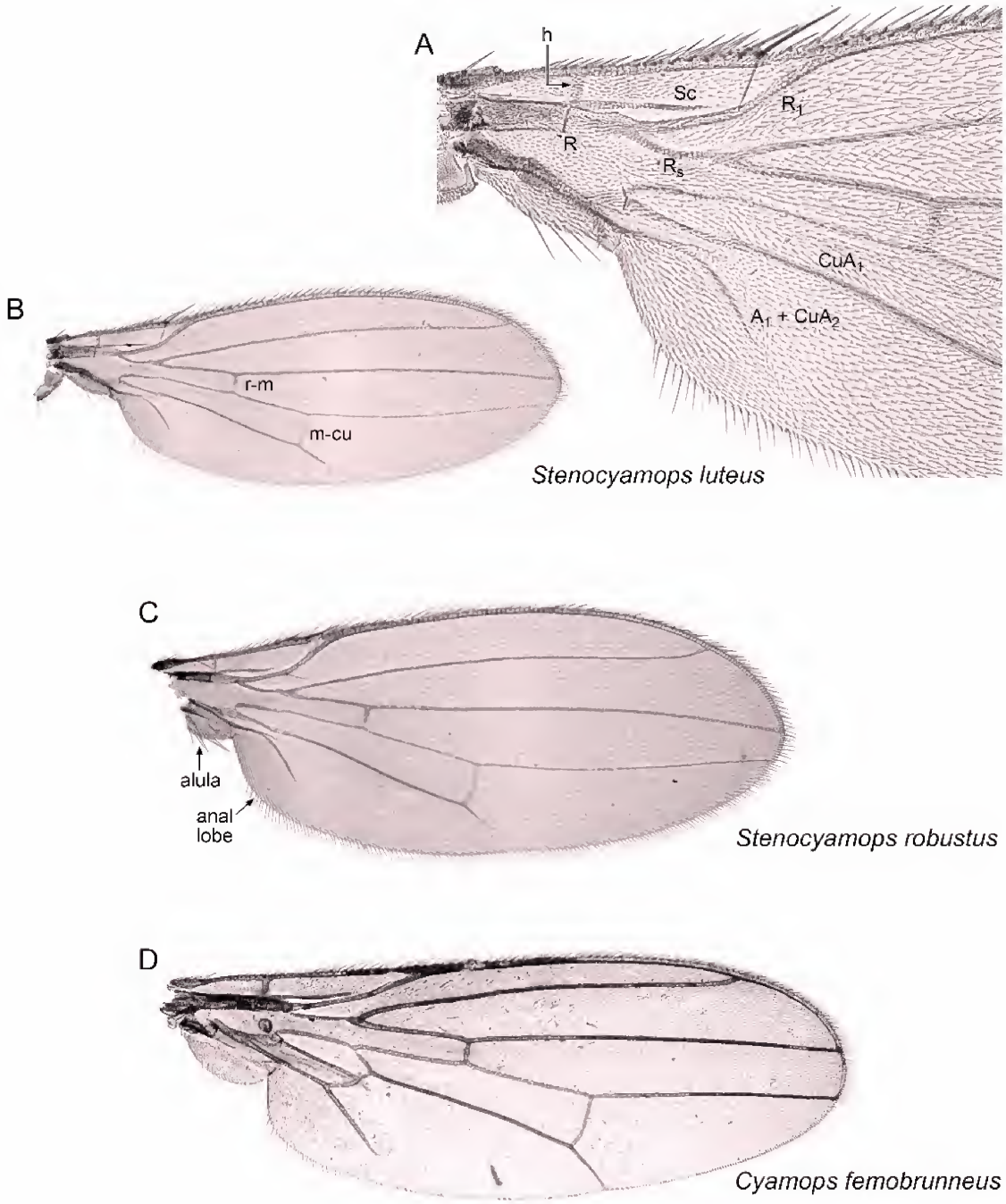

Fig. 17. Wings of Fiji Periscelididae. **A–C:** *Stenocyamops*. **A, B.** *S. luteus*, entire (B) and detail of base (A). **C.** *S. robustus*. **D.** *Cyamops femobrunneus*.

Paired structures and hypandrium symmetrical. Epandrium setose, deep, with very narrow dorsal bridge connecting lateral portions. Cercus with dorsal half membranous, ventral portion sclerotized, forming two pointed, pendulous lobes, lobes setulose, apices extended to level of epandrium where mesal margins flare laterad. Surstylus scimitar shaped, with

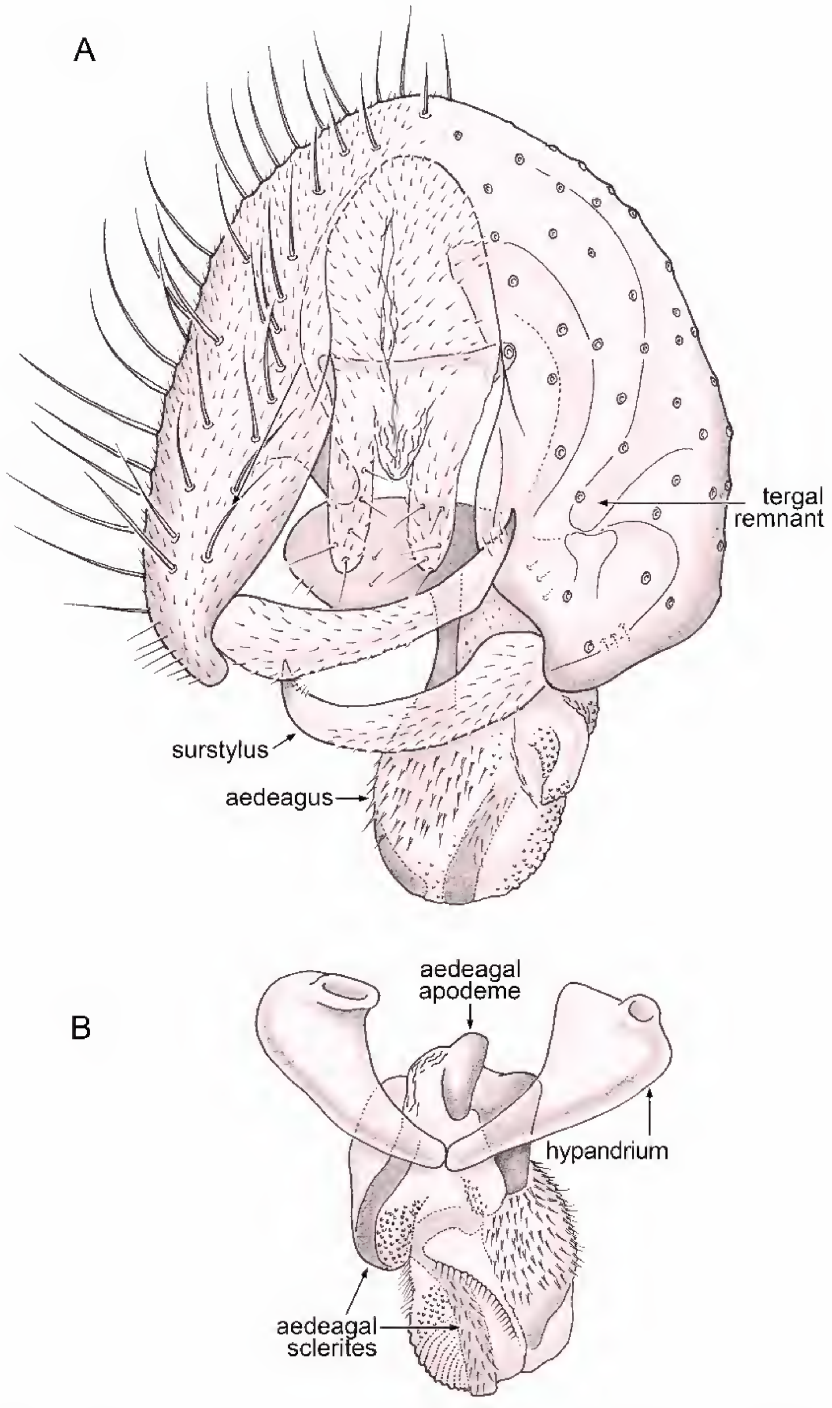

Fig. 18. Male terminalia of *Stenocyamops luteus* (spcm. 41). **A.** Epandrial complex with aedeagus, posterior view. **B.** Hypandrium, aedeagal apodeme, and aedeagus, anterior view. To the same scale.

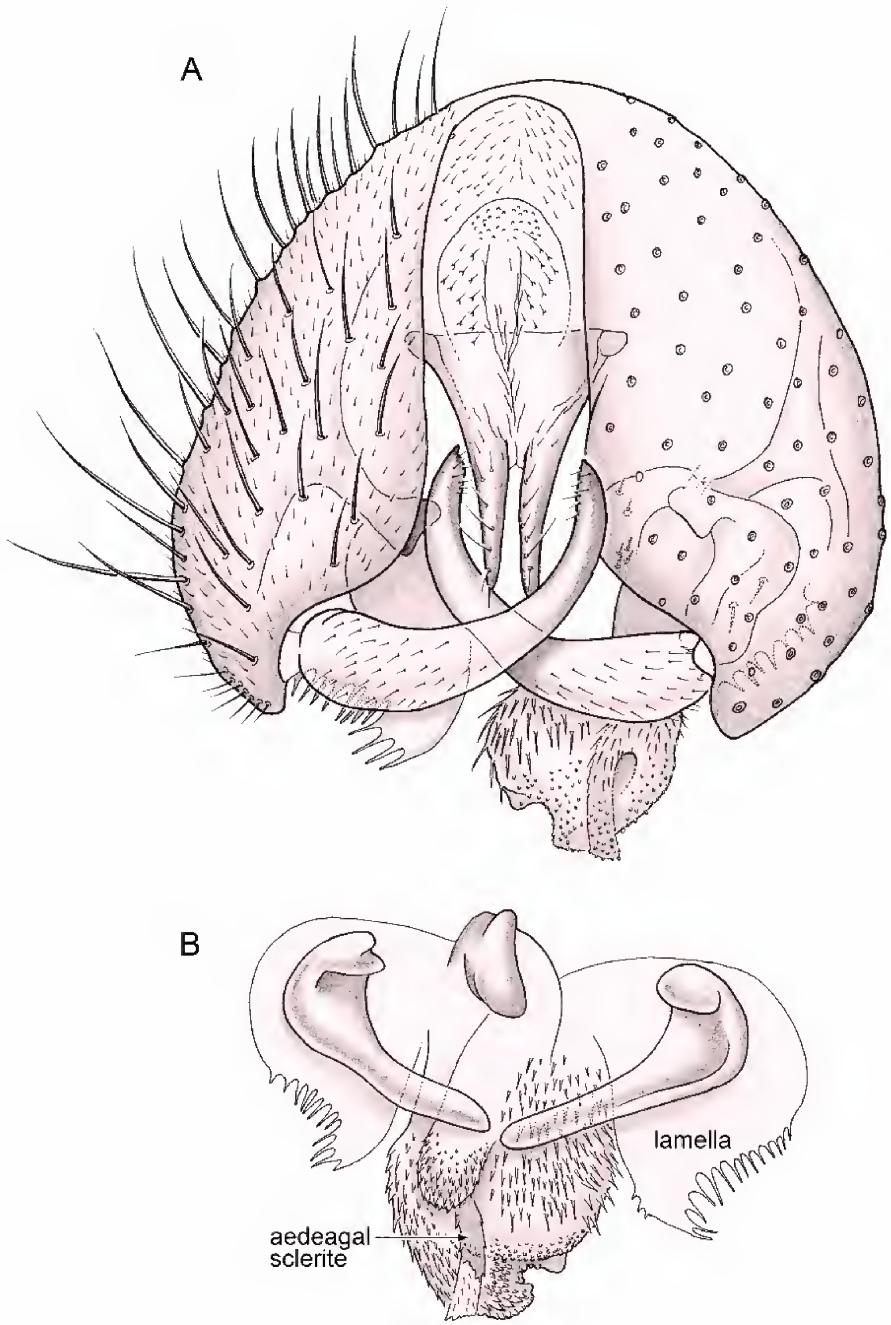

Fig. 19. Male terminalia of *Stenocyamops pseudoluteus* (spcm. 40). **A.** Epandrial complex with aedeagus, posterior view. **B.** Hypandrium, aedeagal apodeme, aedeagus, in anterior view. Origin/homology of the large, flat lamella is uncertain. To the same scale.

preapical setulae on mesal margin and minute apical tooth; basal half of surstylus setulose. Hypandrium reduced, separated into two lateral lobes, median portion narrow and with small gap; lateral lobes bearing broad, flat phragmata with fringed posterior margin. Aedeagus short, bulbous, finely spiculate, apically with sclerotized strip, as figured.

Female Terminalia: very similar to that of *S. vittatus*.

TYPES: Holotype, male (no. 40, dissected): FIJI: **Viti Levu**, VII.9.08, Nakobalevu Rd., 394 m, 18°03′31″S, 178°24′55″E, in rolled leaves, D. Grimaldi. In AMNH. Paratypes: 1 female, same data as holotype (no. 51, dissected); 1 male: **Viti Levu**, VII.11.08, Namosi Road, 200 m, 18°06′11″S, 178°10′29″E, in rolled banana leaves, D. Grimaldi coll (AMNH).

ETYMOLOGY: The name derives from the Latin *pseudo* ("false") and *luteus* ("yellow"), for the superficial similarity in yellow body color to *S. luteus* (see above).

Stenocyamops robustus, new species

Figures 2, 3, 4, 16, 17, 20, 21

DIAGNOSIS: Large-bodied species (0.74 mm ThL), with pleura, ventral portion of thorax, and femora black-brown; scutum ochre with broad, longitudinal, black-brown vitta, female tergites III, IV, VI and all male tergites black-brown (others yellowish). Male genitalia with long, pointed, sclerotized ventral lobes of cerci; surstylus scimitar shaped, apically bare; hypandrium with pair of broad, flat phragmata having continuous margins.

DESCRIPTION: ThL = 0.74 mm. *Body coloration:* Head: Frons and face ochre; vertex, ocellar triangle, oral margin, and clypeus light brown; postgena light yellow; eyes brick red; ground color of cheeks light brown, overlain with silvery-reflective microtomentum. Antennal pedicel dorsally brown, ventrally ochre; basal flagellomere ochre; arista blackish brown. Thorax: Dorsal portion of scutum and scutellum dark brown, graded to ochre in notopleural areas of males, in females dark brown area with more discrete lateral edges and bounded by dorsocentral setae; pleura mostly dark brown, including ground color of anepisternum; anepisternum largely covered with silvery-reflective microtomentum; halter base dark brown, bulb white. Legs with coxae, femora, tibiae mostly dark brown, apices and trochanters lighter; foretarsi light yellow, mid- and hind tarsi whitish. Wing: very slightly and evenly infuscate, with a barely perceptible light transverse band just apical to cross vein dm-cu (best viewed at oblique angle with dark background, better developed in females). Abdomen of male with tergites and sternites entirely blackish brown; female with tergites I, II, V, and anterolateral corners of tVI yellow. All setae on body blackish brown.

Head: Two pairs of frontal-orbital setae present, anterior pair proclinate, slightly shorter than posterior FOs (which are erect); bases of ipsilateral anterior and posterior Fos separated by approximately the diameter of base socket. Ocellar setae and setulae absent; lateral ocelli either diminutive or same size as anterior (median) ocellus. Inner vertical setae proclinate, slightly divergent; outer vertical setae erect, divergent; lengths of each approximately equal. Eyes emarginate surrounding bases of antennae and on posterior margin bordering postgena; eyes with sparse, fine interfacetal setulae; fronto-median facets smallest in males, largest facets (ca. 1.5× diameter of smallest ones) dorsally and ventrally (females with less differentiation). Pedicels laterally flattened, with larger mesal surfaces, inner margins touching but pedicels divergent, having stout seta each on anterior surface that is projected forward and upward, with dorsal seam; basal flagellomeres divergent, each with minute tuft of setulae at apex and pair of small, stiff setae on ventromesal margin. Arista with 6–7 dorsal and 2 ventral branches (plus terminal fork); basal 4–5 dorsal branches crowded near base of aristal trunk, branches projecting laterad. Ptilinal suture extended to approximately level of pseudovibrissae, slightly convergent ventrad. Face protrudent, slightly recessed below level of pseudovibrissae. Pseudovibrissae stout, projecting forward and slightly divergent; bases separated by distance approximately equal to diameter of base socket. Ventral to pseudovibrissae are 6 pairs oral setae; 2 pairs closest to pseudovibrissae project forward and curve slightly laterad; others project laterad and curve slightly ventrad. Clypeus small; oral cavity large, with proboscis generally entirely retracted within.

Thorax: Deep; depth approximately equal to length in lateral view. (Meso-) scutum with single row of 6–8 long acrostichals, extended posteriad to level of dorsocentrals; dorsocentrals in graded series of 6–8 setae, with long

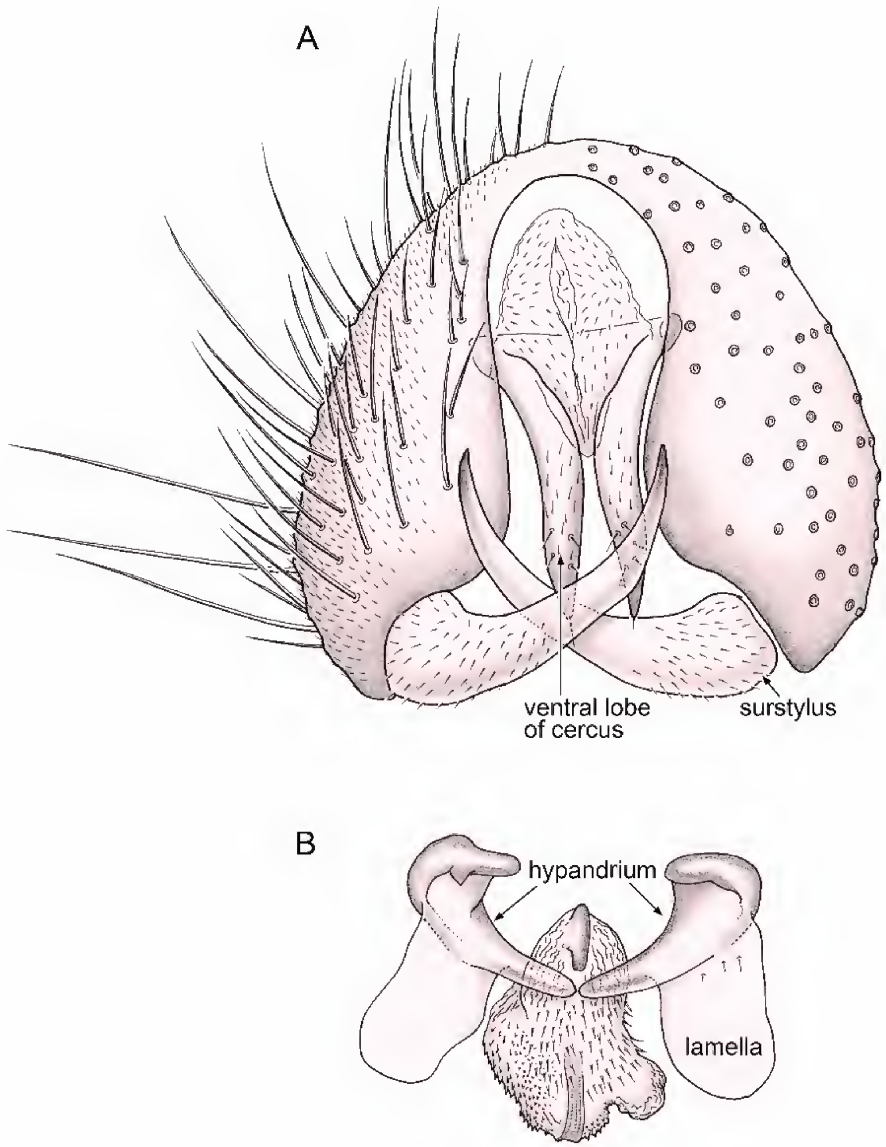

Fig. 20. Male terminalia of *Stenocyamops robustus* (spcm. 28). **A.** Epandrial complex, posterior view. **B.** Aedeagus, hypandrium, aedeagal apodeme, anterior view. To the same scale.

posterior dorsocentral (longest seta on the fly), anterior to it one that is half the length, and anterior to that a smaller one, etc. Mesoscutellum with single pair of long setae, virtually erect. Postpronotal lobe with one or two very fine, short setae; notopleuron with two setae, and one finer seta above and between the notopleurals. (A supraalar seta present only in one specimen: no. 28.) Anepisternum with row of 5–6 fine setae on posterior margin. Single, erect, slender setae on dorsal portion of katepisternum. Coxae, mesosternum, and katepisternum with dense pilosity of long, fine setae. Forecoxa slightly flattened, with posterior surface adpressed to thorax, distal articulation facing laterad, with trochanter and femur projecting laterad. Basisternum triangular, lying between forecoxae; mesosternum broad; midcoxa narrow, anteriorly transverse and largely fused to

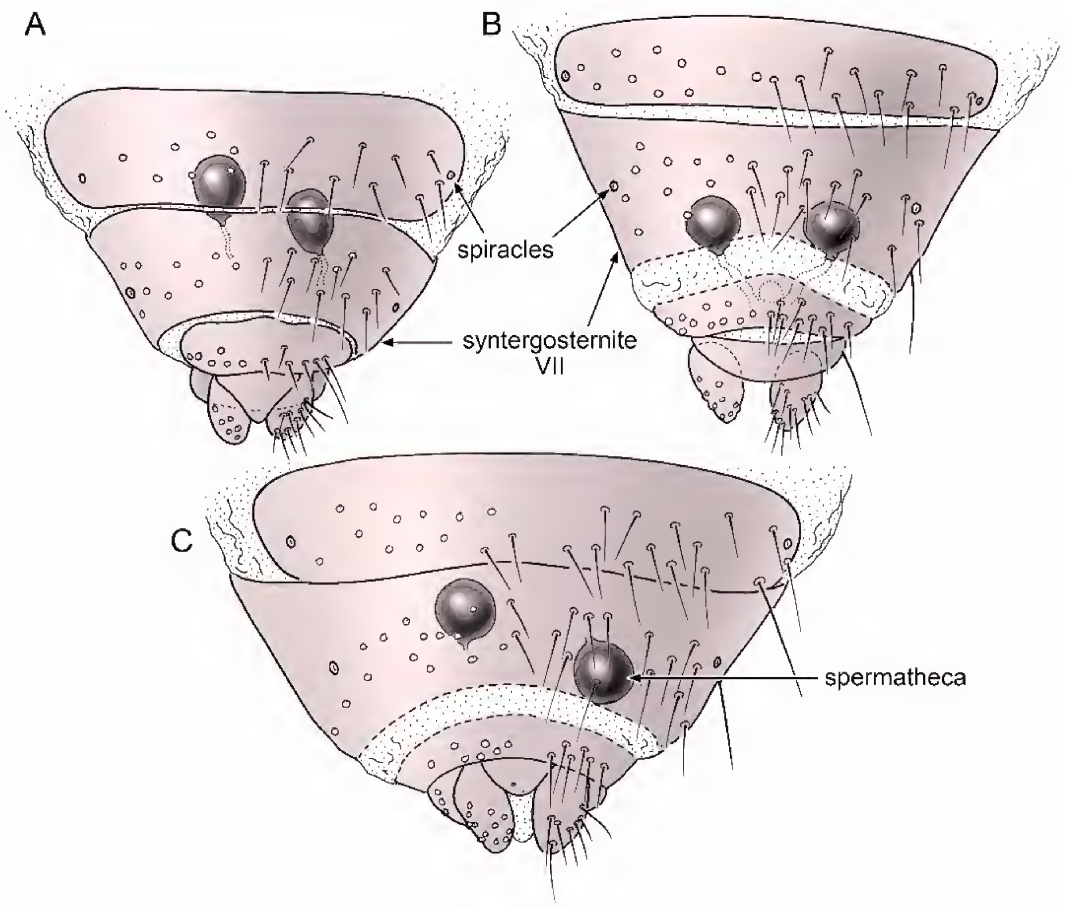

Fig. 21. Female terminalia of Fiji *Stenocyamops*, dorsal views (all to the same scale). **A.** *S. luteus* (spcm. 34). **B.** *S. vittatus* (spcm. 33). **C.** *S. robustus* (spcm. 31). Spermathecae are heavily sclerotized; the last pair of spiracles occur in the lateral margins of syntergosternite VII.

posterior margin of mesosternum, posteriorly reduced to a narrow sclerotized strip in membrane, trochanteral articulation at posteromesal corner of coxa. Hind coxa with similar structure, but largely free (i.e., an anterior articulation to thorax), lying immediately posterior to mid coxa. Forefemur with long, fine, erect setae, pair of thick setae on distolateral surface, plus long, fine seta basally. Midtibia with long, stout, apical spur, length about half that of basitarsomere. Hind tarsi slightly flattened, white, with inner edge having feathery seam of golden, transverse rows/combs of setulae.

Wing: Fairly broad (W/L = 0.43). Membrane with dense, well-developed microtrichia on dorsal and ventral surfaces, microtrichia arranged approximately in rows on distal half. Veins dark, sclerotized. Costal vein terminates at apex of M_{1+2}, with two longitudinal rows of long setulae, long dorsal seta at base; row of 2–4 long, stout setae proximal to where R_1 meets C. No break in C near cross vein h; C weakened but no gap where Sc meets C. Vein Sc incomplete, with terminal end abrupt, not tapered. Dorsal surface of vein R1 with row of 0–5 fine setae. Vein R_{2+3} relatively straight; vein R_{4+5} ends at apex of wing; vein M_1 slightly convergent with R_{4+5}. Cross vein r-m with m end reduced. Cross vein bm-cu and vein CuA_2 lost; cross veins not close together (L r-m / distance between r-m and m-cu = 0.19), vein A_1 +CuA_2 present, short, with abrupt (vs. tapered) terminal end. Vein A_1 absent. Alula reduced, anal lobe present (anal margin not parallel with CuA_1).

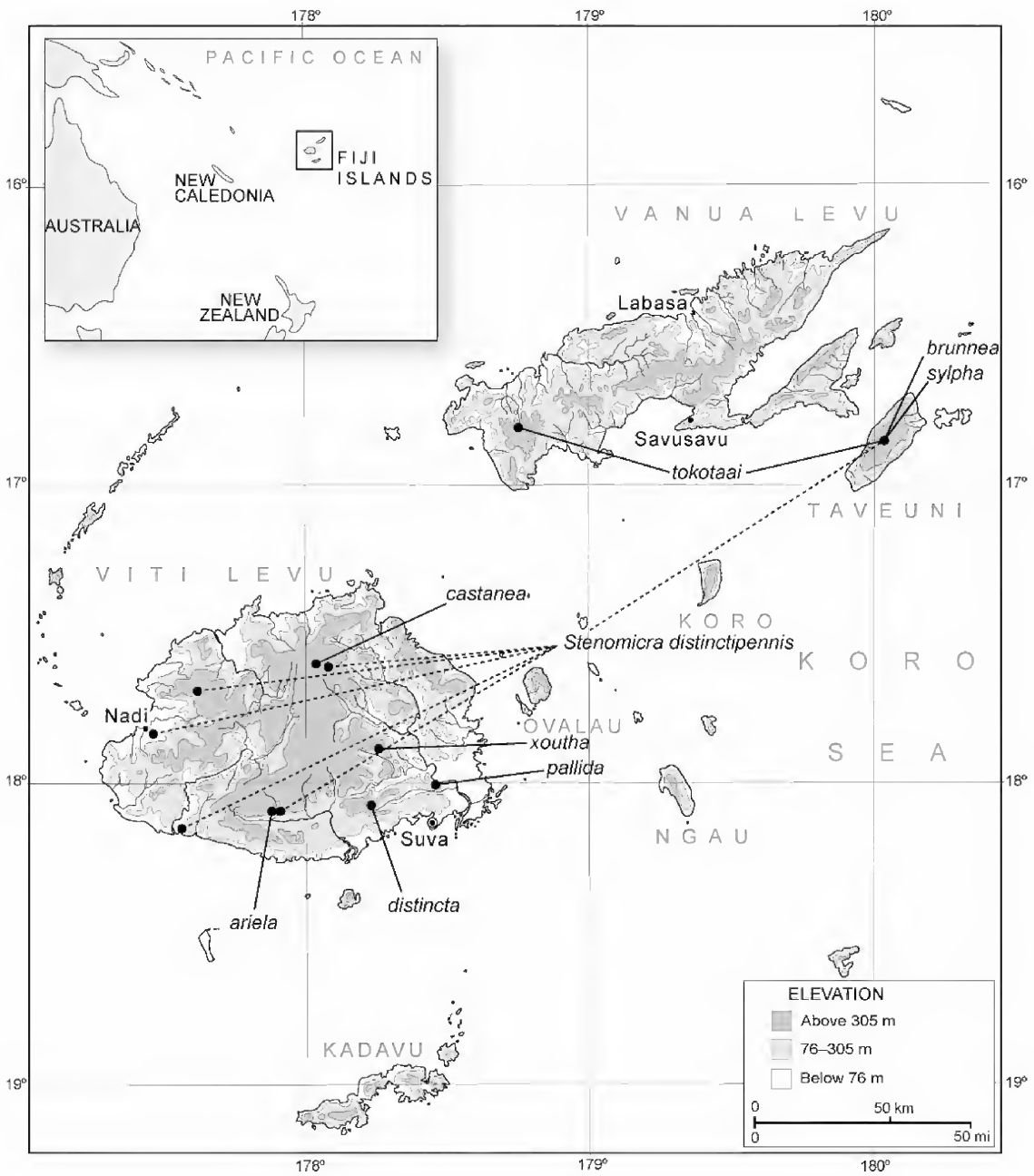

Fig. 22. Distribution of *Stenomicra* species in Fiji.

Male Terminalia: Paired structures and hypandrium symmetrical. Epandrium setose, deep, with shallow dorsal bridge. Dorsal portions of lobes of cerci fused, membranous; ventral lobes of cerci long, pendulous, setulose, apically pointed, apex extended to nearly ventral margin of epandrium. Surstylus scimitar shaped (slightly curved, apically pointed), basal half setulose, no teeth or setae on mesal margin, no setulae at apex. Hypandrium reduced to lateral lobes bearing round, flat phragmata, with small median gap where

lateral lobes nearly join. Aedeagus short, bulbous, spiculed, as figured. *Female Terminalia*: With tVI a simple dorsal plate (not fused to sternite), bearing pair of spiracles at lateral margins; sternite VII and tergite VII fused into a ring, bearing pair of spiracles laterally; tergite VIII a short, narrow sclerite, without spiracles; two spermathecae, heavily sclerotized, spherical.

TYPES: Holotype, male, FIJI: **Viti Levu**, VII.9.08, Nakobalevu Rd., 394 m., 18°03′31″S, 178°24′55″E, in rolled leaves, D. Grimaldi. Not dissected or numbered. Paratypes: Female, same data as holotype (no. 31); male, **Viti Levu**: VII.11.08, Namosi Rd, 200 m, 1806′11″S, 17810′29″E, in rolled banana leaves, D. Grimaldi (dissected, no. 28); female, **Vanua Levu**: VII.7.08, road up Mt. Ndulaikaro, 1000 m, in rolled leaves wild ginger, D. Grimaldi (no. 32, not dissected).

ETYMOLOGY: From the Latin, *robusta*, for "large," in reference to the large body size.

COMMENTS: Variation is substantial but difficult to assess with only four specimens. The minute size of the lateral ocelli in the male holotype is interpreted as a teratology, since there seems to otherwise be little difference between it and the other specimens from Viti Levu. The female from Vanua Levu differs the most: the face is slightly more protruding, the silvery microtomentum on the cheeks slightly more extensive, and the anterior dorsocentrals longer than in the other specimens.

Stenocyamops vittatus, new species

Figures 3, 21

DIAGNOSIS: Known only from females. Differs from other *Stenocyamops* specimens by bands of silvery microtomentum on cheeks that meet in center on face; thorax mostly ochre (including pleura, anepisternum brown), middle of scutum with longitudinal dark brown area that has diffuse lateral edges extending laterally beyond levels of dorsocentrals; abdominal tergites mostly dark brown, with the exception that all of tI and anterior portion of tII ochre.

DESCRIPTION: ThL = 0.66 mm. *Body coloration*: Head: Frons, including fronto-orbital plates, ochre; area between ocelli dark brown. Postocciput, postgena yellowish; lower portion of face (at level of pseudovibrissae and lower), cheeks light brown, this brown area overlain with silvery microtomentum. Eyes pink with a greenish reflection. Antennal pedicel slightly darker than frons; basal flagellomere light brown, arista dark brown. Dorsal portion of scutum dark brown, edges diffuse and extended laterally slightly past level of dorsocentrals. Notopleural areas and most of pleura ochre; anepisternum, portion of anepimeron, and laterotergite light brown, anepisternum with silvery-reflective microtomentum. Wing hyaline, very slightly dusky with barely observable light transverse band in middle; haltere knob white; legs entirely light yellowish. Abdomen (female) with terminal tergites dark brown, graded to light yellowish on tergites I and II.

Head: Vertical setae lost in unique specimen, but judging from sockets they are well developed. Fronto-orbital setae well developed, located in middle of FO plate, separated by distance equal to diameter of socket; proclinate slightly shorter than reclinate. Pseudovibrissae well developed, projecting forward, separated by distance equal to diameter of socket; these subtended by pair of setae pointed laterad and upward, then by four pairs of setae on the cheeks pointed laterad and downwards; 2 long but finer setae on gena. Eyes without differentiation of facets, with fine, sparse interfacetal setulae. Antennal pedicel with deep dorsal cleft; mesal surface of pedicel longer than lateral surface; single strong seta on pedicel (on dorsomesal surface). Arista with long branches, length of longest branch ca. 0.5× length of arista, with 7 dorsal, 2 ventral branches (excluding terminal fork).

Thorax: Two pairs dorsocentrals (setae lost in HT), single row 10 long acrostichals; row of 5 long setae anterior to and in line with dorsocentrals. Three notopleural setae; 1 supraalar seta; 1 fine seta on postpronotal lobe, 1 long katepisternal seta, row of 4 fine setae on posterior margin of anepisternum. Single (apical) pair scutellar setae. Leg setation as described for *Stenocyamops robustus*. Male Terminalia: unknown. Female Terminalia: Tergite VI a narrow transverse strip, not connected to sternite, with pair of spiracles near lateral margins; tergite VII and sternite

VII fused into ringlike syntergosternite, with pair of spiracles laterally; syntergosternite VII somewhat funnel shaped, with length of posterior margin 0.6× that of dorsal margin; two spermathecae, spherical, heavily sclerotized, lying at level of ventral margin of syntergosternite VII.

TYPES: Holotype, female (no. 33, dissected), FIJI: **Vanua Levu**, Bua Province, 6 km NW Kilaka, 15.VI–28.VI.04, Satiqere Range, Malaise. 146 m., Schlinger, Tokota'a, FJVN58d_MO1_07, −16.8153, 178.9854 FBA072145. **Taveuni**: Cakadrove Prov., 5.6 km SE of Tavuki Village, Devo Peak, 1187 m, 30.VI–14.VIII.04, Malaise 1, Schlinger and Tokota'a, 16.843° E, 179.965° W, FBA150905 (female). In BPBM.

ETYMOLOGY: From the Latin, *vitta*, for ("stripe"), in reference to the dark median stripe running along the scutum.

KEY TO GENERA AND SPECIES OF FIJI PERISCELIDIDAE

1. Inner vertical setae absent; pair of reclinate frontal setae lying between proclinate fronto-orbital setae; silvery microtomentum on anterior portion of fronto-orbital plates, on face and cheeks . . . . . genus *Cyamops*, 2
– IV setae present (sometimes small); reclinate frontal setae posterior to proclinate setae; silvery microtomentum on cheeks or oral margin of face only, or missing 4
2. Femora brown, male with left surstylus broadly curved . . . . . *Cyamops femobrunneus*, **n. sp.**
– Femora yellow or apically brown, left surstylus virtually straight 3
3. Forefemur with ctenidium, left surstylus long . . . . . *Cyamops femoctenidius*, **n. sp.**
– Forefemur without ctenidium, left surstylus short . . . . . *Cyamops fiji* Baptista and Mathis
4. Larger bodied species with silvery microtomentum on cheeks and anepisternum, anepisternum with row of setae on posterior margin . . . . . genus *Stenocyamops*, 5
– Smaller, slender species without silvery microtomentum on cheeks and anepisternum, anepisternum without setae (*Stenomicra*) 8
5. Largest species, pleuron, venter of thorax and femora dark blackish brown . . . . . *Stenocyamops robustus*, **n. sp.**
– Smaller species, pleuron mostly yellow with dark anepisternum 6
6. Mesoscutum with dark brown longitudinal stripe . . . . . *Stenocyamops vittatus*, **n. sp.**
– Mesoscutum without brown stripe, entirely yellowish 7
7. Male genitalia: surstylus scimitar shaped; hypandrium with fringed phragmata, pendulous lobes of cerci with apices pointed *Stenocyamops* . . . . . *pseudoluteus*, **n. sp.**
– Surstylus nearly straight, hypandrium without phragmata, pendulous lobes of cerci with rounded apices . . . . . *Stenocyamops luteus*, **n. sp.**
8. Small, slender, grayish species with wings infuscate brown and three transverse bands . . . . . *Stenomicra distinctipennis* Collin
– Similarly colored or yellow or yellow-black species with entirely clear wings 9
10. Body entirely yellow or with light brown areas . . . . . (*Stenomicra ariela* complex) 11
– Body with yellow pleura and black-brown scutum and tergites . . . . . *S. distincta*, **n. sp.**
11. Body entirely or virtually yellowish or whitish yellow 12
– Body with obvious light to dark brown infuscation on thorax 13
12. Body entirely light, surstylus (♂) broad, scooplike . . . . . *Stenomicra ariela*, **n. sp.**
– Thorax with very slight infuscation; surstylus slender, slightly S-shaped, with narrow apex . . . . . *Stenomicra pallida*, **n. sp.**
13. Scutum brown, with yellow longitudinal stripe; pleura without brownish infuscation, all tergites brown . . . . . *Stenomicra brunnea*, **n. sp.**
– Dorsal thorax light brown to very slightly infuscate, pleura with infuscation, anterior tergites brown 14
14. Surstylus short, straight, with blunt apex . . . . . *Stenomicra castanea*, **n. sp.**
– Surstylus long, slender, curved, with pointed apex 15
15. Each lobe of male cercus ventrally with large, stout seta . . . . . *Stenomicra sylpha*, **n. sp.**
– Male cerci without such setae, or smaller ones 16
16. Notum with slight bluish pruinescence, aedeagus fusiform with narrow tip . . . . . *Stenomicra tokotaai*, **n. sp.**
– Notum without pruinescence; aedeagus with trunk, apex broad and brushlike . . . . . *Stenomicra xoutha*, **n. sp.**

FAMILY ASTEIIDAE

This is a worldwide family of approximately 100 described species of very small acalyptrates grouped into 10 genera. They are typically boldly colored, with the dorsum dark and the venter light. Except for *Leiomyza*, the wing venation is distinctively reduced, with vein R_{2+3} being very short and ending near the

apex of R_1. A few species have been bred from fungi, and many species are associated with trees; few are collected using generalized methods like Malaise traps. Although all but two of the 10 genera occur in the Indo-Pacific region, Fiji's known fauna has five species of just the genus *Asteia* Meigen, all but one of which are new.

Genus *Asteia* Meigen

Asteia Meigen, 1830: 88. Type species: *A. amoena* Meigen, by subsequent designation (Westwood, 1840: 152).

Asteia comprises well over half the world's species of the family, and it is rather heterogeneous in composition. *Asteia*, *Astiosoma* Duda, and *Phlebosotera* Duda may actually be paraphyletic with respect to some of the smaller, highly endemic genera with very specialized features. There are 32 described species of *Asteia* in the Indo-Pacific region, 23 from the Pacific and only 9 species from mainland Asia (Sabrosky, 1977, 1989). The last major treatment for this region was Sabrosky's (1957) contribution on the Asteiidae to the *Insects of Micronesia* series, wherein he provided a key to the Pacific species.

Asteia nigriceps Bezzi

Figure 23, 25

Asteia nigriceps Bezzi, 1928: 160; Sabrosky, 1957: 37 (discussion), 1989 (catalog).

DIAGNOSIS: In the Fijian fauna *nigriceps* is most similar to *Asteia pleurovitta*, except that *nigriceps* does not have a dark pleural stripe, it has a dark frons with well-developed ocellar setae, two (vs. three) pairs of dorsocentrals, and possesses 2 short rows of acrostichals. Separated from *A. acrostichalis* Sabrosky (Caroline Islands), which also distinctively possesses acrostichals, by the new species having a flatter head, shallow postgena, and greatest length of eye being oblique instead of nearly vertical (cf. Sabrosky, 1957: fig. 1).

DESCRIPTION: ThL = 0.51. *Body coloration*: Head with frons entirely dark brown, frontal vitta finely striate and dull, fronto-orbital plates bare and shiny; ocelli white. Pedicel and most of face dark brown, face with white transverse stripe adjacent to oral margin. Cheeks, proboscis, palps, clypeus cream colored; postgena and postocciput dark brown. Eyes light red. Mesoscutum entirely brown, scutellum and mesonotum entirely white. Pleura and legs entirely cream colored. Wing hyaline; halter with stem light, knob very light brown. Dorsum of abdominal segments I–XI and entirety of abdominal segments IV–VI brown, remainder of abdomen including terminal segments cream colored. All setae black or dark except for light katepisternal setae.

Head and abdomen: Frons flat, but of moderate length. One, reclinate fronto-orbital seta present; anterior to this is row of 3 fine, short setae. Slightly above ptilinal suture is small pair of short, stout, cruciate interfrontal setae. Pair of long, fine ocellar setae present; postocellars either lost or very minute. Inner and outer vertical well-developed, OVs ca. 1.3× length of IVs. Antennal pedicel with long dorsal setae (rest of antennae lost in new specimen). Face flat. Eyes bare, greatest length oblique to longitudinal axis of body. Proboscis, palpi, wings, legs as for *A. pleurovitta*. Scutum with very slight microtomentum, surface not shiny or polished. Two pairs of dorsocentrals; anterior pair slightly shorter than posterior pair. Two short rows acrostichals of 3–4 setulae each on anterior half of scutum, end at level of anterior DCs. Row of 4–5 similar setulae anterior to each anterior DC, and oblique row of 3 setulae anterior to mesoscutal suture. No postpronotal or supraalar setae, 2 notopleural setae. Female abdomen with sternites vestigial; tergites reduced in size and lightly sclerotized. Male terminalia: Epandrium short, broad; surstyli symmetrical and forcipate, with narrow tips; pair of broad, flangelike sclerites inside each surstylus and below cerci. Hypandrium Y-shaped; aedeagal apodeme long and narrow; ejaculatory apodeme large, palette shaped; aedeagus short, sclerotized, as figured.

TYPE: As cited by Bezzi (1928) holotype, male: FIJI: Loloti, 18.ix.1921; an additional specimen from Lautoka Mts., 1.ix.1921 (W. Greenwood). In NHM, London (examined). Body of the type is intact, but the setae and antennae are lost, and some details are obscured by glue.

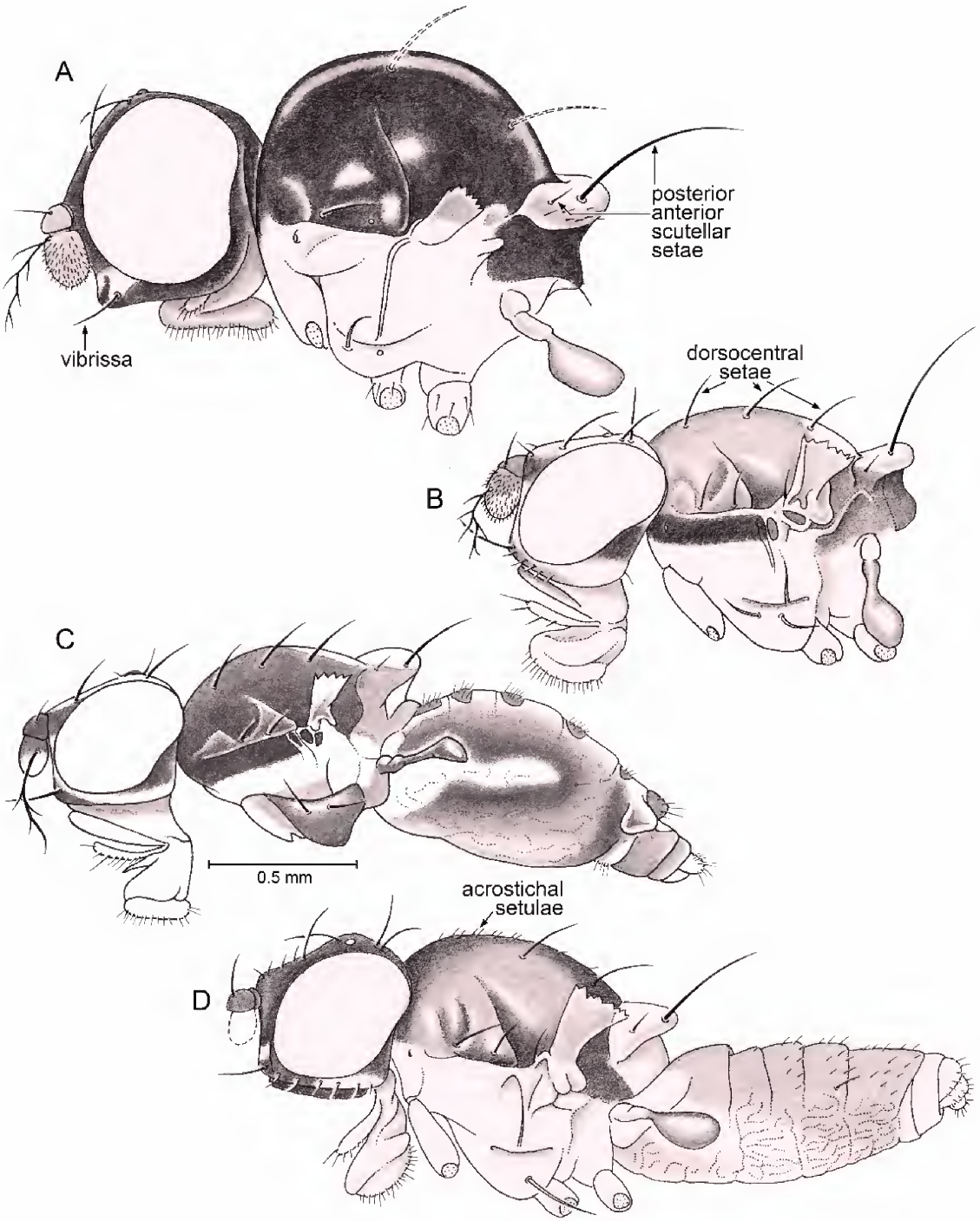

Fig. 23. Portions of the left lateral habitus of Fiji *Asteia* (Asteiidae) (to the same scale). **A.** *A. rotundiscuta*, n. sp. **B.** *A. pleurovitta*, n. sp. **C.** *A. pleurovittata*, n. sp. **D.** *A. nigriceps* Bezzi.

MATERIAL EXAMINED: Female (not dissected), FIJI: **Viti Levu**, Vuda Prov., Koroyanitu N.H.P., Gavuione Trail. FJ-1 Malaise [trap] in montane forest. 21.IX–7.X.2002, M. Irwin, E. Schlinger, M. Tokota'a, 17°40′S–177°33′E, 450 m. FBA 005317; Koroyanitu EcoPark, Mt. Evans, 1 km E. Abaca, Kokabula Trail: −17.667°, 177.55°, 800 m, 12.X–19.X.2002, Malaise MO1, M. Tokota'a, FBA202857 (male, dissected: no. 62). **Taveuni**: Cakaudrove Prov.: 3.2 km NW Lavena Vlg., Mt. Koronibuabua, 217 m, 26.III–9.IV.04, Malaise 3, Schlinger and Tokota'a, 16.855°S, 179.89°W, FBA145571 (male). In BPBM and AMNH.

COMMENTS: Bezzi's original description mentions this species as a shiny black instead of brown; otherwise, the new specimens agree in all respects with his description and that of Sabrosky (1956). *Asteia nigriceps* appears most closely related to *A. pleurovitta* based on the similar body coloration and the distinctive pair of small, cruciate profrontal setae on the frons. Significant differences are that *A. nigriceps* has two instead of three pairs of dorsocentrals as well as possessing acrostichal setulae. Interestingly, all three of the *Asteia* species described above were collected in the same Malaise trap in Koroyanitu National Historic Park on Viti Levu.

Asteia pleurovitta, new species

Figures 23, 24, 27

DIAGNOSIS: Head somewhat flattened, frons light, face with transverse white band in female, male with light face and brown stripe on oral margin; ocellar setae minute (barely visible); mesoscutum with 3 pairs dorsocentrals, mostly light brown, with whitish posterior portion adjacent to white scutellum; pleura cream colored except for dark brown longitudinal stripe just ventral to notopleural suture; legs light, halter dark brown; male terminalia with surstylus large and crescentic, aedeagus with bulbous distal end. Similar to *Asteia pleurovittata*, n. sp. (for differences, see diagnosis below).

DESCRIPTION: ThL = 0.51. *Body coloration*: Frons graded anterior to posterior from dark ochre to cream, with area between ocelli dark brown; ocelli light. Female face having thin stripe of dark brown on oral margin, bordered by white transverse band; dorsal half ochre; male with whitish face and thin, dark brown stipe on oral margin. Scape, pedicel, dorsal half of basal flagellomere dark brown; ventral half of basal flagellomere ochre. Eyes pink/light red. Cheeks, proboscis, clypeus, palps entirely cream colored; postgena dark brown. Mesoscutum mostly dark brown, with cream colored triangle on posterior half blended into creamy scutellum; lateral corners of scutellum light brown; postnotum cream. Pleura light cream color, with dark brown stripe from anterior margin of scutum to wing base, just ventral to notopleural suture and including portions of wing base. Legs entirely light. Halter base light; middle of stem and all of know dark brown. Tergites mostly light brown, with lateral portions of tIII in female dark brown. All setae blackish, except for very light setae on katepisternum.

Head: Flattened, depth ca. 0.6× the length; longest axis of eye nearly in line with body axis. Frons long, flat; frontal vittae very finely striate; single pair of stout, reclinate fronto-orbital setae, lie anterior to midlength of frons, lengths about equal to that of verticals; fine, scattered setulae on frons near ptilinal suture, especially laterally; a distinctive pair of fine, cruciate setae on anterior margin of frons (the profrontals), lengths ca. 0.4× that of FOs. Ocellar setae highly reduced to setulae barely longer than diameter of ocellus. Postocellar setae minute. Inner and outer vertical setae well developed, thick, OVs slightly longer and IVs. Antennae with bases displaced laterally, such that lateral surfaces face head and mesal surfaces face forward; pedicel with single, stout dorsal seta and small group fine, light setulae on ventromesal surface; basal flagellomere nearly circular in broad view, with proximal notch into which fits pedicel attachment. Arista with 3 dorsal, 2 ventral branches (not including apical fork), longest branch ca. 0.4× length of entire arista. Face flat, with very slight vertical ridge on dorsal half; face slightly microtomentose, not polished. Single pair vibrissae present, well developed (length about equal to that of FOs, but slightly thinner); 2 fine setae ventral to vibrissae. Cheek very shallow; eye is oblong, bare of interfacetal setulae. Palp long, slender, slightly curved, with approximately 5 fine setae on ventral edge.

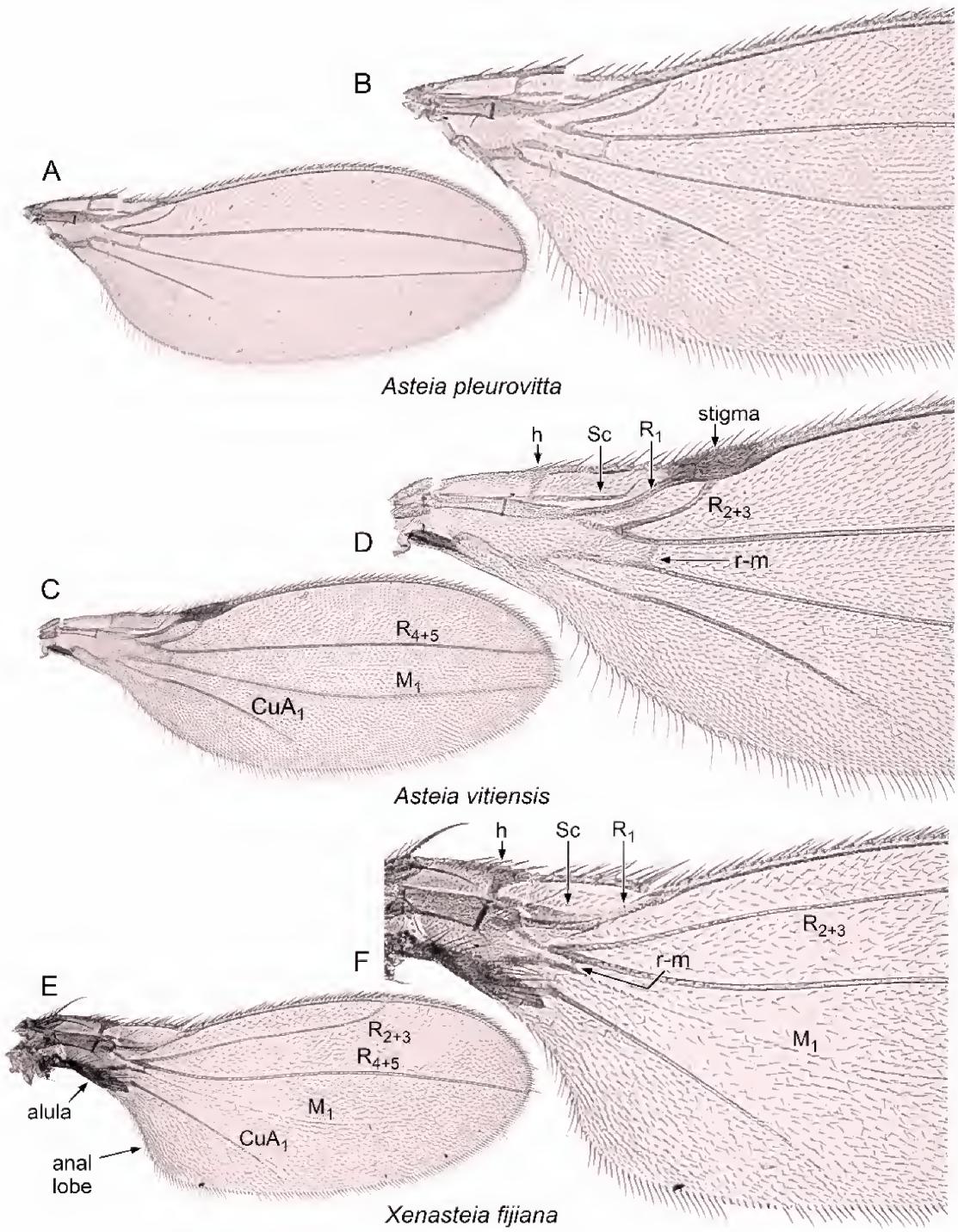

Fig. 24. Wings (entire and detail of bases) of Fiji Asteiidae and Xenasteiidae. **A, B**. *Asteia pleurovitta*, n. sp. **C, D**. *Asteia vitiensis*, n. sp. **E, F**. *Xenasteia fijiana*, n. sp. A, C, E to same scale; B, D, F to same scale.

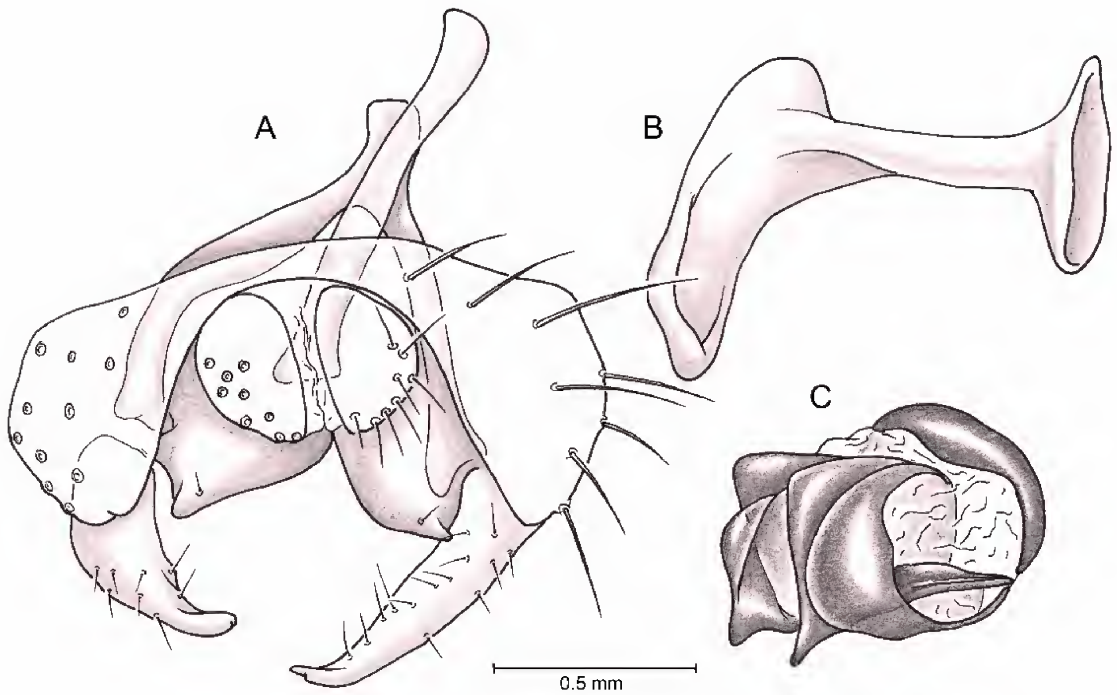

Fig. 25. Male terminalia of *Asteia nigriceps* Bezzi. **A.** Epandrium and genitalia, posterior view. **B.** Ejaculatory apodeme, lateral view. **C.** Aedeagus, oblique posterior view. All to the same scale.

Thorax: Mesoscutum not arched or domed, with three pairs stout dorsocentrals; middle pair of dorsocentrals equidistant between anterior and posterior pairs. Mesoscutum with sparse, light pollinosity, surface not polished or shiny; no acrostichals. Dorsocentrals slightly shorter than vertical setae. No postpronotal or supraalar setae; 2 notopleural setae (slightly finer and shorter than dorsocentrals). Scutellum with two pairs setae, anterior pair very small and fine, length ca. 0.2× that of posterior scutellars; posterior scutellars large, slightly divergent, somewhat erect. Katepisternum with two, very fine, light setae near dorsal margin. Legs without distinctive setation, except on tarsi. Fore- and midtarsi with ventral rows gold, stiff setulae; dorsally each tarsomere with pair of short, stout, black setae. Wing with venation typical of *Asteia* (see above), notable exceptions light-colored C, no thickening of vein R_1 at apex, and vein Cu evanescent for apical half. Alula completely lost, anal lobe reduced (anal margin divergent with course of vein CuA_1, not parallel). Abdomen almost entirely membranous, tergites reduced to small, lightly sclerotized sclerites; sternites largely lost. Male terminalia: Epandrium light colored and lightly sclerotized, cerci small and mostly membranous; surstylus large, with large, pointed mesal lobe that makes surstylus virtually crescentic in shape, inner edge of which is lined with fine, spiculelike setulae. Aedeagus typically elaborate, sclerotized, twisted, but with apical portion distinctively swollen (as figured).

Types: Holotype male (dissected, no. 51): FIJI: **Viti Levu**, Vuda Prov., Koroyanitu N.H.P., Savuione Trail. FJ-1 Malaise. 21.IX–7.X.2002. M. Irwin, E. Schlinger, M. Tokota'a, 17°40′S–177°33′E, 450 m, FBA018202. In BPBM. Paratypes: female (not dissected), same, FBA 018185; Koroyanitu EcoPark, 0.5 km N Abaca Vlg., 800 m., 7–12.X.2002, Malaise 1, Schlinger and Tokota'a, 17.667°S, 177.55°E, FBA093688 (female), 093689 (male), 093690 (female) (in BPBM and AMNH).

Etymology: From *pleura* and Latin *vitta* ("stripe"), in reference to the dark brown stripe on the upper portion of the pleuron.

Comments: As given in the diagnosis above, this is a very distinctive species.

Asteia pleurovittata, new species

Figures 23, 27

DIAGNOSIS: Very similar to *Asteia pleurovitta* (see description, above), distinctive similarities being: transverse white band on face of female, brown band on oral margin in male; dorsal half of basal antennomeres brown (ventrally light); mesoscutum brown, with whitish area anterior to scutellum, top of scutellum whitsh; pleura with dark brown stripe just ventral to notopleural suture, whitish beneath stripe; ocellar setae minute, barely visible, 3 pairs dorsocentrals (no acrostichals); male terminalia with pair of large, slender epandrial lobes anteromedial to surstyli; aedeagus short, sclerotized, bulbous.

Differs from *Asteia pleurovitta* by *A. pleurovittata* having brown coloration on katepisternum, coxae, and proximal halves of legs (vs. light); more extensive brown pigmentation on abdomen (extended laterally); females much darker brown than males; by the flatter frons and more shallow head and thorax; arista with 1 dorsal and 2 ventral branches, exclusive of apical fork (vs. 3D, 2V branches); epandrial lobes more slender, with apical knob bearing fine papillae; aedeagus more bulbous apically and with fine scales.

TYPES: Holotype, male [not dissected], Fiji: **Viti Levu**: Vuda Prov., Koroyanitu Pk, 1 km E Abaca Vlg, 800 m, 19–26.XI.2002, Malaise 1, coll. Schlinger and Tokota'a, 17.667°S, 177.55°E, FBA176071. ThL = 0.94 mm. In BPBM. Paratypes: FBA176072-5 (4 males, 1 dissected [no. 63]). Two females, also 1 km E Abaca Vlg.: 19–26.X.2002, Malaise, E. Schlinger and M. Tokota'a, FJVL02, MO1.04, FBA085400, 085408. In BPBM and AMNH.

ETYMOLOGY: A variation on the name of the most closely related species, and in reference to the body coloration.

Asteia rotundiscuta, new species

Figures 23, 26

DIAGNOSIS: Head almost entirely glossy black, with white transverse band across face; mesoscutum highly arched, glossy black, with two pairs of dorsocentrals; scutellum mostly light, with very long apical pair of setae; pleura and legs entirely light, cream colored; male terminalia as figured, with bilobed surstylus.

DESCRIPTION: ThL = 0.63. *Body coloration*: Frons, face, cheeks, postocciput dark, and portion of face glossy black-brown; ocelli whitish, flanked by two short, parallel stripes ("interfrontal stripes": Sabrosky, 1957) extended from vertex to about the level of median ocellus; face with bright white transverse band near oral margin, bordered by dark brown; dorsal portion of face and bases of antennae light brown. Eyes light pink. Proboscis and palps light cream colored. Scutum shiny black-brown; scutellum mostly off-white, with posterolateral corners brown, postnotum dark brown; entire thoracic pleura and all legs cream colored; wings hyaline (no infuscation), halter with stem cream colored, knob dark tan. Abdominal tergites dark brown, remainder of abdomen light.

Head: Eye large, deep, greatest length along vertical axis; cheek extremely shallow. Frons with single pair of fronto-orbital setae, located slightly posterior to mid length of frons (ocellar, inner and outer vertical setae lost in unique specimen). Frontal vitta very slightly striate. Antennal pedicel with single, long seta on anterior margin, seta projects forward; basal flagellomere nearly round in lateral view; arista with 3 dorsal, 2 ventral branches, length of longest branch 0.3× length of entire arista. Palp very slender.

Thorax: Mesoscutum highly arched, dome shaped; lacks acrostichal setulae, with two pairs of dorsocentrals (based on sockets—setae lost in specimen). No postpronotal seta, two notopleurals (bases separated by length of anterior npl). Scutellum short, with sparse microtomentum; anterior scutellars very small and light, apical scutellars black, thick, long (length slightly more than half the length of scutum). Pleuron devoid of setae except for two light setae on dorsal margin of katepisternum. Each tarsomere on fore- and midlegs with pair of short, stout, black setae; setae are dorsal on forelegs, ventral on midlegs. Wings as figured, typical of most *Asteia*: C is thick, without Sc or h breaks, Cextended to apex of M, bearing thick microtrichia on leading edge; Sc incomplete; R_1 short, thickened where it meets C; R_{2+3} short, apex lies slightly distal to apex of R_1; R_{4+5} straight, extended nearly to apex of wing; M nearly parallel to R_{4+5}, slightly kinked in middle; only short br-m cross vein present;

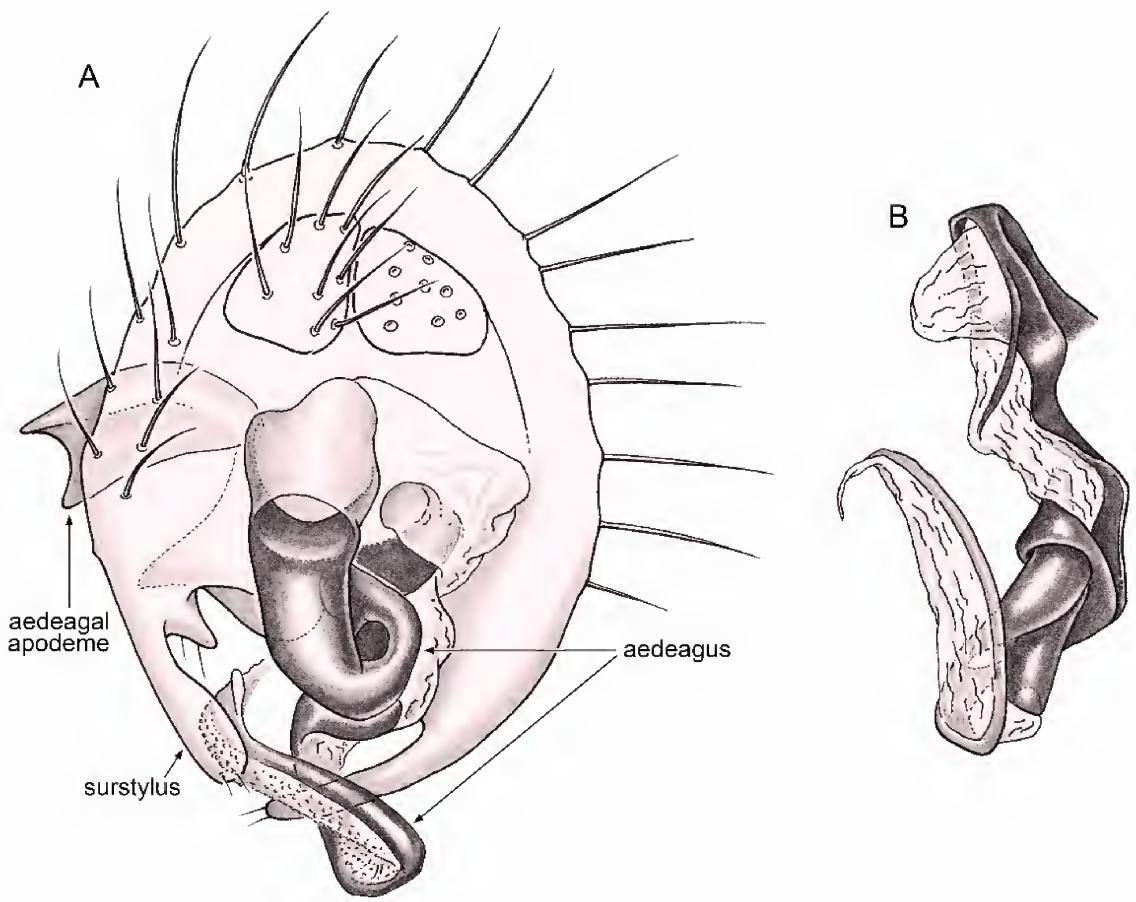

Fig. 26. Male terminalia of *Asteia rotundiscuta*. **A**. Epandrial complex with aedeagus, posterior view. **B**. Aedeagus, lateral view. To the same scale.

Cu well developed, but apex not reaching margin of wing; anal lobe and veins, alula absent. Wing with microtrichia arranged in longitudinal rows parallel to veins, membrane bare at wing base. Terminalia: (unknown for female); male with deep, narrow, light-colored, setose epandrium, having surstylus with short lobe on median surface. Aedeagus typically largely sclerotized, twisted (as figured), with distinctive apical membranous section.

TYPES: Holotype, male (unique specimen, dissected, no. 50) FIJI: **Viti Levu**, Vuda Prov., Koroyanitu N.H.P. Savuione Trail. FJ-1 Malaise. 21.IX–7.X.2002. M. Irwin, E. Schlinger, M. Tokota'a, 17°40′S–177°33′E, 450 m, FBA018203. In BPBM.

ETYMOLOGY: From the Latin *rotundus* for "rounded," and *scutum*, in reference to the dome-shaped scutum.

COMMENTS: This species keys to *Asteia curvinervis* Duda (from Taiwan) in Sabrosky (1957). Based on the original description by Duda (1927: 145), and subsequent description by Sabrosky (1957: 226), the Fiji species differs from *curvinervis* by having a light (vs. dark brown) halter, by having the palps and labellum light yellow (vs. brown), longer interfrontal stripes, and larger ocellar setae. The type of *A. curvinervis*, reported as in the Hungarian Natural History Museum (Budapest), was not examined.

Asteia vanuaensis, new species

Figure 28

DIAGNOSIS: Externally virtually identical to *Asteia vitiensis*, exceptions being a thinner

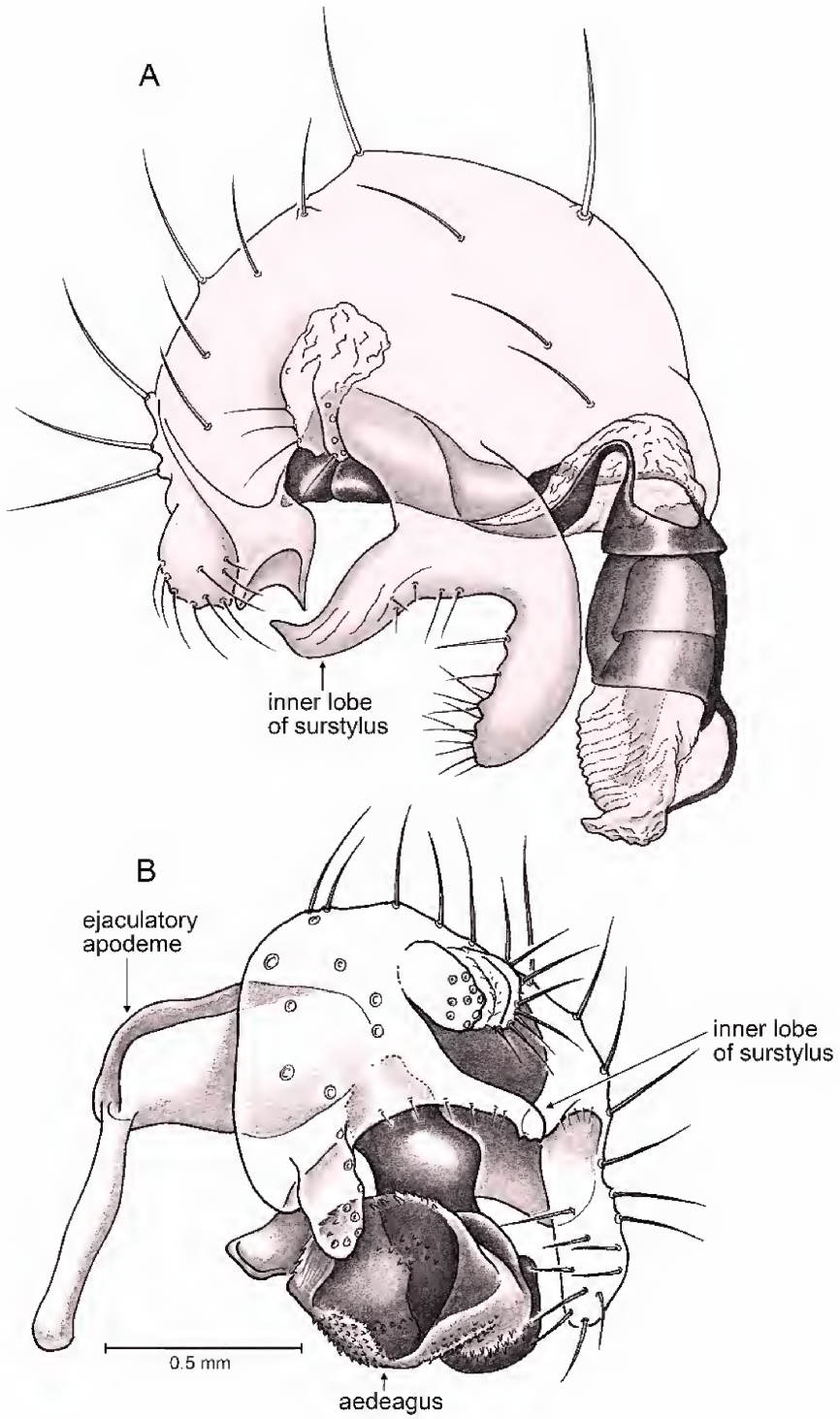

Fig. 27. Male terminalia of *Asteia pleurovitta* (**A**), and *A. pleurovittata* (**B**). **A.** Epandrium, surstyli, and aedeagus, oblique posterior view. **B.** Epandrium, surstyli, aedeagus, and ejaculatory apodeme, oblique posterior view.

inner vertical seta and a dark (vs. light) palp. Best distinguished from *vitiensis* on basis of male terminalia (as figured): epandrium slightly asymmetrical (right side slightly thicker), aedeagus long, usually extensively protruding in undissected specimens, mostly sclerotized, with about 6 twists; apices of surstyli acute, left surstylus with apical tooth.

DESCRIPTION: ThL = 0.51 mm. As for *vitiensis*, with exceptions as noted above in diagnosis.

TYPES: Holotype, male: FIJI: **Vanua Levu**: VII.7.08, Road up Mt. Ndulaikoro, 1000 m, in rolled leaves of wild ginger, D. Grimaldi. Not dissected. Paratypes: Same data, 3 males (2 dissected: nos. 42, 44), 2 females. In AMNH. Other specimens: **Vanua Levu**, VII.2.08, 16°32′21″S, 179°32′50″E, 402 m, D. Grimaldi, in rolled banana leaves (3 females, 2 males: in AMNH).

ETYMOLOGY: Species epithet from Vanua [Levu], in reference to the distribution.

COMMENTS: There is little question about the close relationships of *A. vitiensis* and *vanuaensis*, based on the apomorphic features listed in the diagnosis of the former. They seem to be endemic to each of the two big islands. The thickened stigmata at the end of Sc and R_1 occurs sporadically throughout Asteiidae and *Asteia*: in two species from Costa Rica (*Asteia spinosa* Sabrosky, *Asteimyia antennata* Sabrosky), in *Asteia nudiseta* Sabrosky from Hawaii, in *Asteia atrifacies* Sabrosky from Guam, in an undescribed species from Australia, and in *Bryania bipunctata* Aldrich from the Hawaiian Islands. The species that most closely resemble the new Fijian species in most other features are *Asteia atrifacies* and the new species from Australia, though neither of these has the greatly expanded face of the Fiji species.

Asteia vitiensis, new species

Figures 24, 29

DIAGNOSIS: This and *A. vanuaensis* are among the most distinctive species of the genus, both easily distinguished from other *Asteia* by the long branches of the arista; a very broad, shiny face; a large, thick stigma at the apices of R_1 and R_{2+3}; and asymmetrical surstyli, with the right surstylus at least 2× the length of the left one. *Asteia vitiensis* is best distinguished from *vanuaensis* based on males: the aedeagus is about one-half the size of that in *vanuaensis*, such that it barely protrudes in undissected specimens, and the apex of the left surstylus is broadly rounded instead of acute and with an apical tooth.

DESCRIPTION: ThL = 0.47. *Body coloration*: Vertex of head, ocellar triangle, fronto-orbital plates, postgena, postocciput, mesoscutum, scutellum, postnotum, laterotergites, halteres, and tergites II, III, IV dark brownish black. Ocelli light orange; eyes red. Face light brown, with light blue, metallic shine; oral margin tan. Frons and antennal bases ochre. Proboscis and palps, cheeks, legs, rest of abdomen, and portion of pleura light cream colored; remainder of pleura light yellow. Wing hyaline except for basal stigma, no markings/infuscation. All setae black, except for blond setae on katepisternum.

Head: Inner and outer vertical setae present; IVs upright and parallel, OVs lateroclinate, divergent. Postocellars minute; ocellar setae small, length ca. 2× diameter of ocellus. Fronto-orbital setae slightly reclinate; anterior FOs very small, ca. 0.3× the length of posterior FOs, separated from each other by length of AFO. Fronto-orbital plates shiny, extended only to AFO; frons dull. Bases of antennae divergent; pedicel with 3 thick, stout setae on anterodorsal edge, dorsalmost seta 2× length of others, pointed upwards (two shorter setae pointed forwards). Flagellomere 1 with fine, blond setulae. Arista black, with 3 dorsal, 2 ventral, long branches (not including basal fork); longest branch 0.7× length of arista. Face very large, broad, ventrally broader than frons. Ptilinal suture dark brown on cheek; pair of strong, thick vibrissae present, lengths about equal to that of PFO. Clypeus narrow, cheeks shallow (depth approximately equal to 3× diameter of eye facet). Palp long, slender, ventrally with ca. 6 long setae. Eyes bare (no setulae), with posterior margin slightly emarginate.

Thorax: Mesoscutum and scutellum with sparse, light pollinosity; small, polished strips without pollinosity lateral to dorsocentrals and on supraalar areas; no acrostichal setulae present. Three pairs dorsocentrals, stiff, upright, about equidistant from each other;

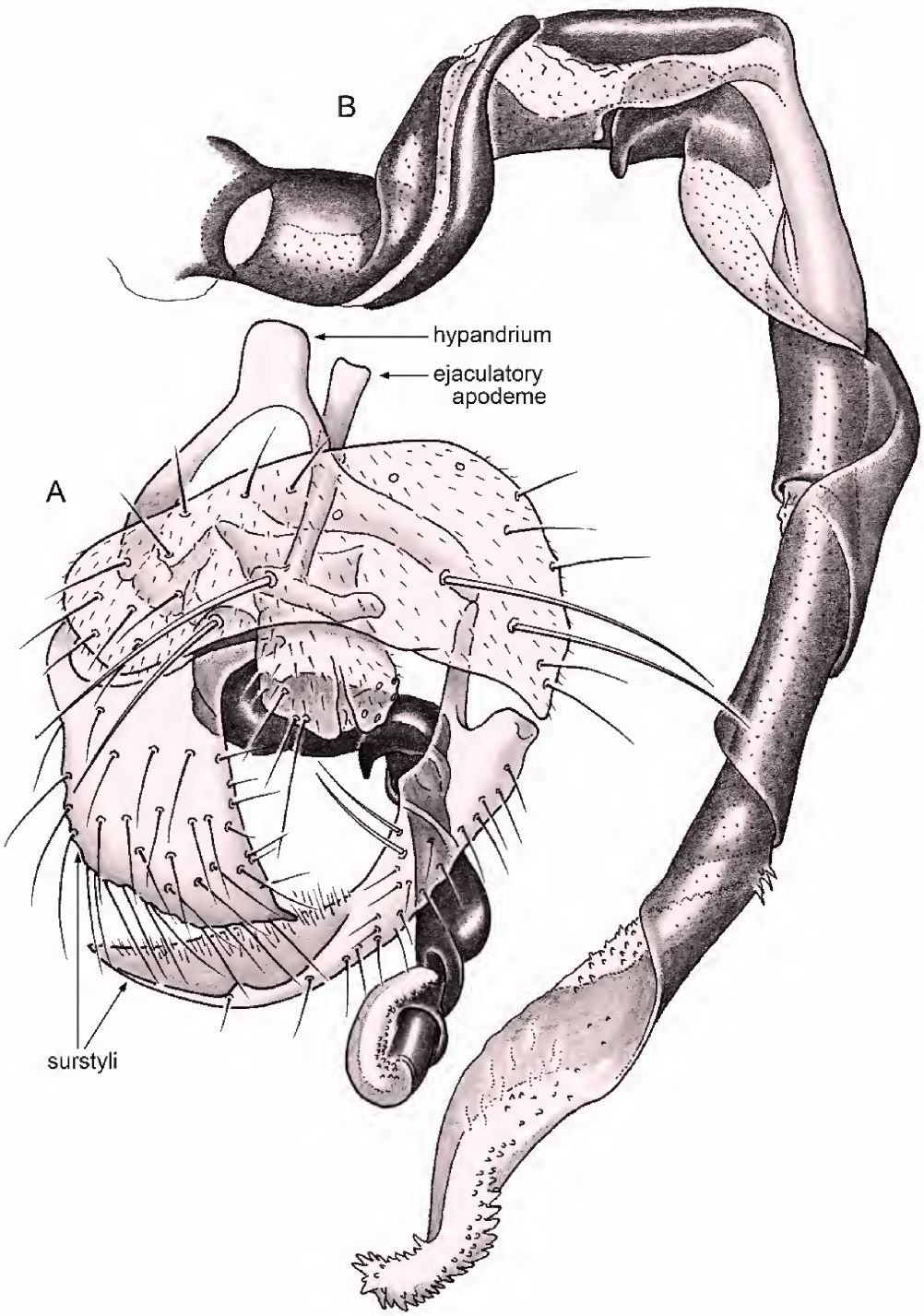

Fig. 28. Male terminalia of *Asteia vanuaensis*. **A.** Epandrial complex with aedeagus, in posterior view. **B.** Aedeagus, lateral view. Not to same scale.

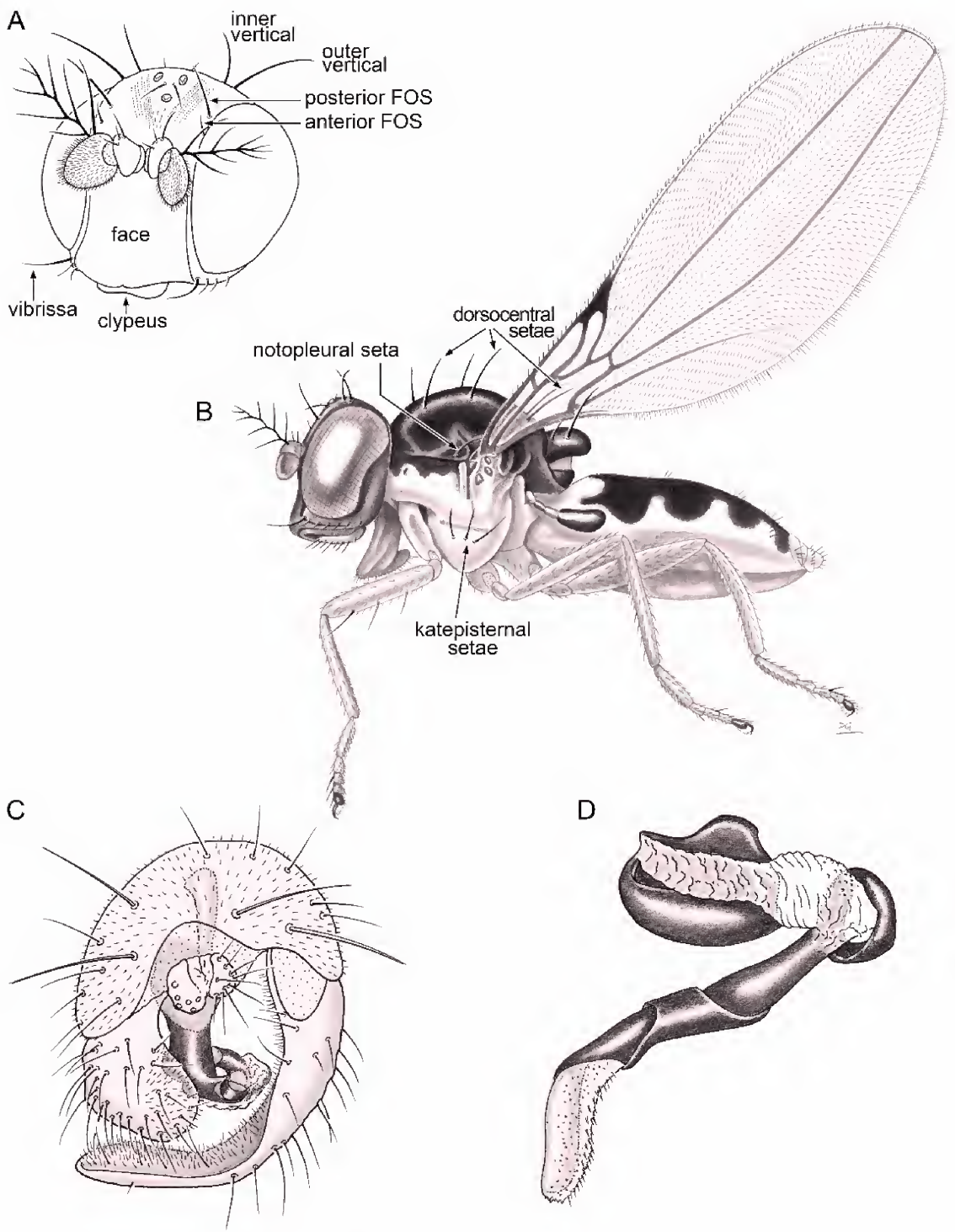

Fig. 29. *Asteia vitiensis*, n. sp. **A.** Oblique frontal view (detail of head). **B.** Lateral habitus of *Asteia vitiensis*. **C.** Epandrium and surstyli, posterior view. **D.** Aedeagus, posterior view. This species and the similar *A. vanuaensis*, n. sp., are common in the rolled leaves of understory gingers.

anterior pair slightly shorter than others. Two pairs scutellar setae, anterior scutellars about 0.3× size of posterior scutellars; posterior scutellars upright. No setae on postpronotal lobe; one notopleural setae (thick, stiff); 2–3 fine, yellow setae on dorsal half of katepisternum. Coxae and ventral portion of thorax with some light yellow setae. Legs: Fore femur with thick, black seta on anterior portion of ventral surface; other ventral setae light, fine. Basitarsomeres with two thick, longitudinal rows short, scalelike setae. Distal tarsomeres with long setae on dorsal surface; distal tarsomere of each leg light brown; claws black, pulvilli large. Wing with R_1, R_{2+3} short, meeting in thick, coriaceous stigma; no humeral or subcostal breaks; vein C ending slightly beyond apex of vein M; veins R_{4+5} and M nearly parallel, barely convergent towards apex; vein CuA_1 incomplete apically; CuP very fine, short, barely distinguishable along anal margin; anal lobe and alula absent; only cross vein br-m present, slightly oblique to longitudinal veins.

Abdomen with tergites highly reduced and barely sclerotized; sternites essentially lost. Male terminalia: Epandrium crescent shaped, with four large, thick setae posteriorly; cerci small, largely membranous; surstyli grossly asymmetrical, with right surstylus almost entirely overlapping left surstylus, left surstylus with rounded apex, right surstylus scoop shaped, both surstyli with microtrichia on inner surfaces, setulose on outer surfaces; aedeagus mostly sclerotized, with about 5 twists, proximal end swollen, apex membranous, as figured.

Types: Holotype, male: FIJI: **Viti Levu**, VII.11.08, 18°02′15″S, 178°10′03″E, in rolled banana leaf, 100 m, D. Grimaldi coll. In AMNH, not dissected. Paratypes: 5 males, 3 females, same data (1 male dissected, no. 47). All in AMNH. Other specimens: **Viti Levu**: VII.9.08, Nakobalevu Rd. 394 m, 18°03′31″S, 178°24′55″E, in rolled leaves, D. Grimaldi (3 males [nos. 46, 48 dissected], 1 female); VII.11.08, Namosi Road, 200 m, 18°06′11″S, 178°10′29″E, in rolled banana leaves, D. Grimaldi coll. (5 females); VII.10.08, Savura Topline Road, 150 m, in rolled leaves of wild ginger, D. Grimaldi (5 males [nos. 43, 49 dissected], 4 females). Sigatoka Prov., Sigatoka Sand Dunes N.P., FJ-6C, malaise, coastal forest, 14.XII–22.XII.02, M. Irwin, E. Schlinger, M. Tokota'a, 177°30′E, 18°90′S, 10 m, FBA007087 (female), 007075 (female). In AMNH and BPBM.

Etymology: Species epithet from Viti [Levu], in reference to its distribution.

Comments: Coloration of the frons can vary from light ochre to a very deep black-brown (seen in 1 female from type locality).

Key to Species of *Asteia* of Fiji

1. Apices of veins R_1 and R_{2+3} end in thick, dark stigma; face broad and polished, with metallic shine, without white transverse band 2
– Apices of veins R_1 and R_{2+3} not ending in stigma; face taller than wide, with matte surface, face with white transverse band 3
2. Palp light; aedeagus about half the length of right surstylus . . . . . *vitiensis*, **n. sp.**
– Palp dark; aedeagus slightly longer than right surstylus . . . . . *vanuaensis*, **n. sp.**
3. Scutum blackish brown, shiny, dome shaped. . . . . *rotundiscuta*, **n. sp.**
– Scutum light brown, not shiny, not dome shaped 4
4. Dorsal portion of pleura with dark brown longitudinal stripe 5
– Pleura entirely cream colored, without stripe . . . . . *nigriceps*, Bezzi
5. Katepisternum and coxae light, cream colored . . . . . *pleurovitta*, **n. sp.**
– Katepisternum and coxae brown . . . . . *pleurovittata*, **n. sp.**

FAMILY XENASTEIIDAE

This is a small, monogeneric family comprised of 11 described species from principally Pacific islands, but also known from northern Australia, the Indian Ocean, and the Mediterranean region (table 1). The Fiji species named below is only the twelfth one described. Xenasteiids are as yet unknown from the African mainland, Madagascar, the Asian mainland, or anywhere in the New World. The family was originally proposed by Hardy (1980) for the newly described genus *Xenasteia*, some five months before Papp (1980) independently described Tunisimyiidae for his new genus *Tunisimyia*, both names clearly referring to the same group of flies.

The family was named because of its apparent close relationship to the Asteiidae,

TABLE 1
World species of the monogeneric Family Xenasteiidae (*Xenasteia*)
(in chronological order of description)

Species	Known Distribution
X. aldabrae Hardy, 1980	Aldabra (Hardy, 1980)
X. divergens Hardy, 1980	Marianas, Caroline Islands, Palau, Yap (Hardy, 1980)
X. okinawaensis Hardy, 1980	Okinawa (Hardy, 1980)
X. palauensis Hardy, 1980	Palau Islands (Hardy, 1980)
X. sabroskyi Hardy, 1980	Hawaii (Hardy, 1980)
X. seychellensis Hardy, 1980	Seychelles Islands (Hardy, 1980)
X. excellens (Papp) 1980	Tunisia (Papp, 1980), Spain? (Carles-Tolrá, 1995), Israel? (Freidberg, 1994)
X. shalam Freidberg, 1994	Israel (Freidberg, 1994)
X. hardyi Ismay, 2003	Hawaii (Ismay, 2003)
X. lansburyi Ismay, 2003	New Guinea, Queensland (?) (Ismay, 2003)
X. chinensis Papp, 2005	Taiwan (Papp, 2005)
X. fijiana, n. sp., herein	Fiji (Viti Levu)

as based on the reduced venation. Some genera of Asteiidae lack cross vein m-cu, veins CuA_2 and A_1 and cell cup, as is found in *Xenasteia*, and this genus has further specialization of the veins (given in the diagnosis below). Otherwise, there are actually few apomorphic similarities between Xenasteiidae and Asteiidae, contrary to Hardy's (1980) discussion. McAlpine allied the two families on the basis of "male sternite VI reduced and shifted to the left side" (McAlpine, 1989: 1455). What is referred to as "sternite VI" by Hardy (1980) and McAlpine (1989) may actually be, along with "sVII and sVIII" lobes on the left side of tergite VII (fig. 31).

Genus *Xenasteia* Hardy

Xenasteia Hardy, 1980: 11. Type species: *X. sabroskyi* Hardy, by original designation.
Tunisimyia Papp, 1980: 417. Type species: *T. excellens* Papp, by original designation.
Synonymy by McAlpine, 1989: 1466 (date precedence).

DIAGNOSIS: Small, compact, dark-bodied acalyptrates with generally a metallic shine on the frons, scutum, and abdominal tergites. Head with minute pair of postocellar setae, generally 3 pairs of fronto-orbital setae (anteriormost pair inclinate); arista bare or minutely setulose, pedicel with dorsal seam. Scutum with 2 pairs of dorsocentrals, approximately 4 rows acrostichals. Wings with distinctive venation: Vein C with break near Sc, weakened near h (but no humeral break, contra Hardy, 1980); R_{2+3} short; vein M past level where R_{2+3} and R_{4+5} fork is evanescent, represented by row of microtrichia; Cu present, incomplete; anal veins lost. Male terminalia distinctive but uniform: with pair of large lobes on posterior margin of hypandrium, which project posteriad and bear apical pair of minute, spinelike setulae; pair of long, projecting surstyli also present; aedeagus small, mostly membranous; male pregenital sclerites asymmetrical, well developed (tVII?) on right side.

COMMENTS: Based on the collecting data, *Xenasteia* spp. appear to be associated with xeric, sandy habitats, particularly seashores and near-shore habitats. They commonly come to light (Hardy, 1980; Ismay, 2003; Papp, 2005), and congregate on xeric vegetation, but also have been found on decaying fish (Hardy, 1980; Ismay, 2003). The vegetation from which they have been collected are tamarisk (*Tamarix*) trees (Freidberg, 1994; Carles-Tolrá, 1995), *Chrithanemum maritimum* stems (Papp, 1980), and decaying leaves of *Pandanus* (Pandanaceae) (Hardy, 1980; Ismay, 2003). These plants are associated with saline and maritime habitats. Interestingly, the new Fiji species is probably the only one to have been collected using Malaise traps, but from a unique environment in Fiji: the Sigatoka Sand Dunes, of which large stands of *Pandanus* occur nearby. Systematic collecting at Sigatoka using light traps will probably yield a large series of *Xenasteia*.

Xenasteia fijiana, new species

Figures 24, 30, 31

DIAGNOSIS: Body largely dark brown with metallic highlights; legs light yellowish; scutel-

lum velvety black; anteriormost (inclinate) fronto-orbital seta very small, about one-third the size of adjacent FO seta; wing with br-m cross vein almost completely lost. Distinguished from the very similar species *X. divergens* and *X. similis* by male terminalia, which in *X. fijiana* have stouter cerci, thicker surstyli, more slender posterior lobes of the hypandrium, thicker paraphyses, and a hypandrium and epandrium that is broader.

DESCRIPTION: ThL = 0.58 mm. *Body coloration*: Frons, scutum, pleura, abdominal tergites glossy, polished brown. Eyes light pink, ocelli light yellowish. Antennal pedicel and basal flagellomere yellowish. Arista light brown, base whitish. Face, palps, proboscis very light yellow. Scutellum velvety black-brown. Dorsal portion of pleura slightly darker than ventral portion. Femora very light brown, tibiae and tarsi light yellow. Wings hyaline, no patterning. Halter light brown, particularly knob. All setae blackish brown; lighter on legs and ventral portion of thorax.

Head: Broad, width slightly greater than that of scutum; postocciput deeply concave, anterior surface of scutum adpressed deeply into postocciput, such that posterior margins of eyes nearly reach to notopleural setae. Eyes bare of interfacetal setulae; no differentiation of facets; eye oblong in frontal view. Frons with lateral margins significantly convergent anteriad, width of anterior margin ca. 0.5× width of posterior margin of frons. Polished surface of ocellar triangle demarcated by thin, finely striate frontal vittae. Pair of strong ocellar setae present, about equal in size to anterior fronto-orbital; postocellars 0.7× size of ocellars, convergent to slightly cruciate. Inner verticals (upright, parallel) and outer verticals (lateroclinate) longest setae on head, approximately in size. Fronto-orbital plates with 2 large pairs setae posteriad, 3 small pairs anteriad (lengths ca. 0.4× that of PFOs); large setae lateroclinate to reclinate, small pairs inclinate. Antenna with pedicel having thick, upright seta on dorsal surface; pedicel with deep dorsal cleft, posterolateral surface shorter than anteromesal surface. Basal flagellomeres with fine setulae, flagellomeres only slightly divergent; arista completely bare (no evidence of fine hairs), base swollen about twice thickness of trunk. Face narrow, recessed, lightly sclerotized (possibly membranous); cheeks very shallow, depth equal to diameter of one eye facet. One pair of well-developed vibrissae, with 4–5 smaller setae posteriad. Clypeus very narrow. Palps slightly curved, with ventral row of fine setulae.

Thorax: Scutum only slightly arched, with two pairs dorsocentral setae that are closely situated (separated only one-half length of anterior DC). Acrostichal setulae numerous, scattered (barely in rows) over anterior half of scutum; acrostichals larger, about one-half the size of anterior dorsocentrals. Anterior DC about 0.6× length of posterior DC. Scutellum with two pairs of setae, anterior pair 0.6× length of posterior (apical) pair. Lateral setae of scutum: one supraalar, one presutural, two notopleurals, one postpronotal. Katepisternum with two setae near dorsal margin, anterior seta 0.5× size of other. Legs: fore-femur with ventral row longer setae; midtibia with long apical spur (length ca. 2× thickness of tibial apex); basitarsomeres with ventral "combs" of thick setulae; claws large, black; pulvilli whitish, feathery. Wing: Hyaline; vein C extended to apex of R_{4+5}; no break in C at cross vein h, break near where R_1 joins C. R_{2+3} short, length 0.65× that of R_{4+5}. Slight vestige of cross vein r-m present, cross vein largely lost and extremely short; vein M beyond this point is evanescent, represented by row of microtrichia. Vein CuA_1 straight, apex incomplete. Vein CuP or A largely or completely lost, alula present but narrow, with marginal fringe. Anal lobe present, with denser microtrichia on membrane surface.

Abdomen: Rotund, with tergites large and well sclerotized, with very fine setulae; sternites short, lightly sclerotized. *Male terminalia*: Tergite VII small, connected via narrow strips to ventrolateral lobes ("sternites VIII, VII, VI") according to Hardy (1980). Epandrium short, with setae and microtrichia on dorsal surface. Cerci large, setose; surstyli long, slender lobes that project ventrad, apices with slight scales on inner surfaces. Hypandrium roughly triangular in shape, articulating laterally with epandrium, having long, projecting posterior lobes; each hypandrial lobe with two subapical spines pointed laterad. Aedeagus small, membranous lobe at

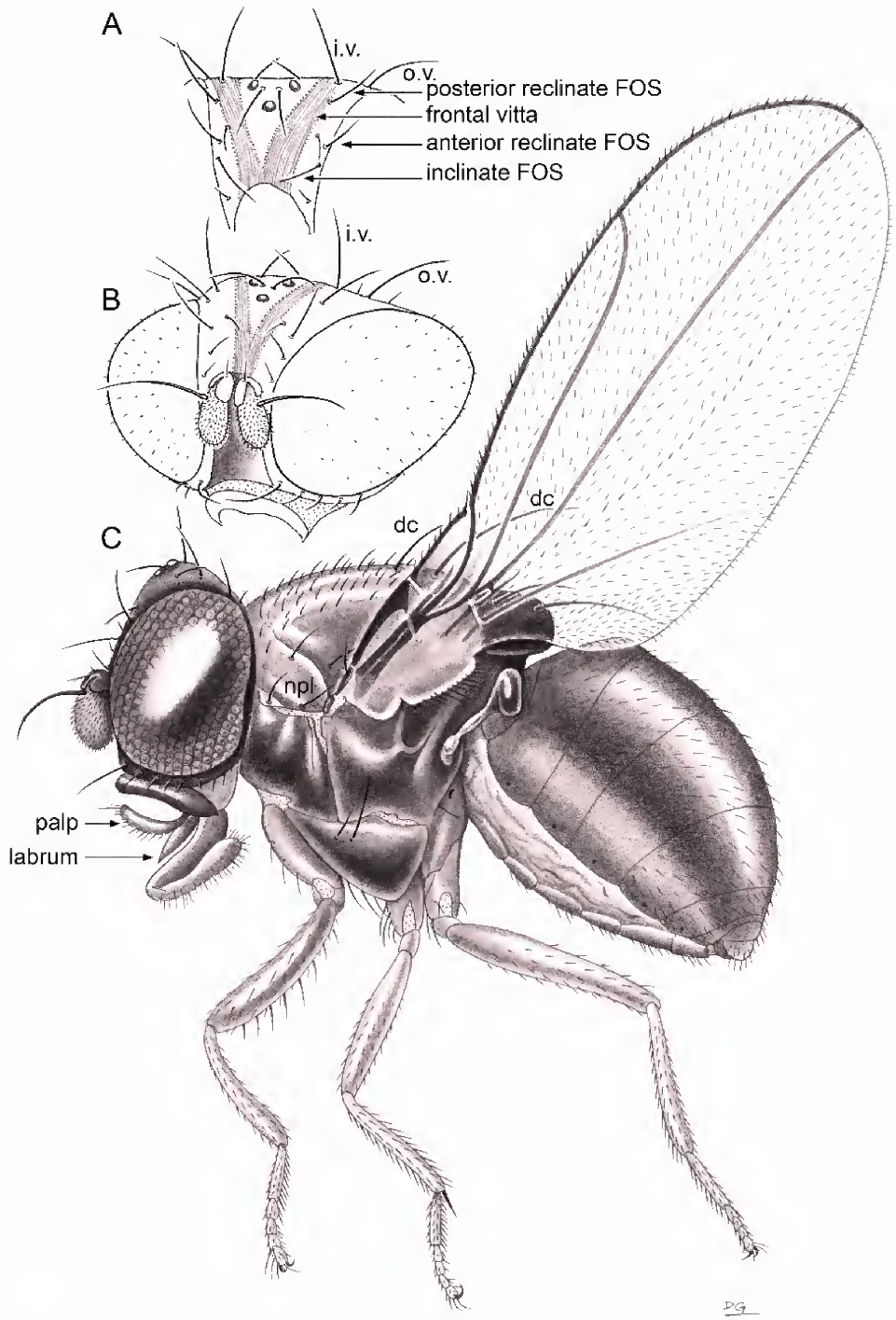

Fig. 30. *Xenasteia* spp. **A.** Oblique frontal view of frons in *Xenasteia divergens* Hardy. **B.** Oblique frontal view of head of *Xenasteia fijiana*. **C.** Left lateral habitus of *Xenasteia fijiana*. All to the same scale.

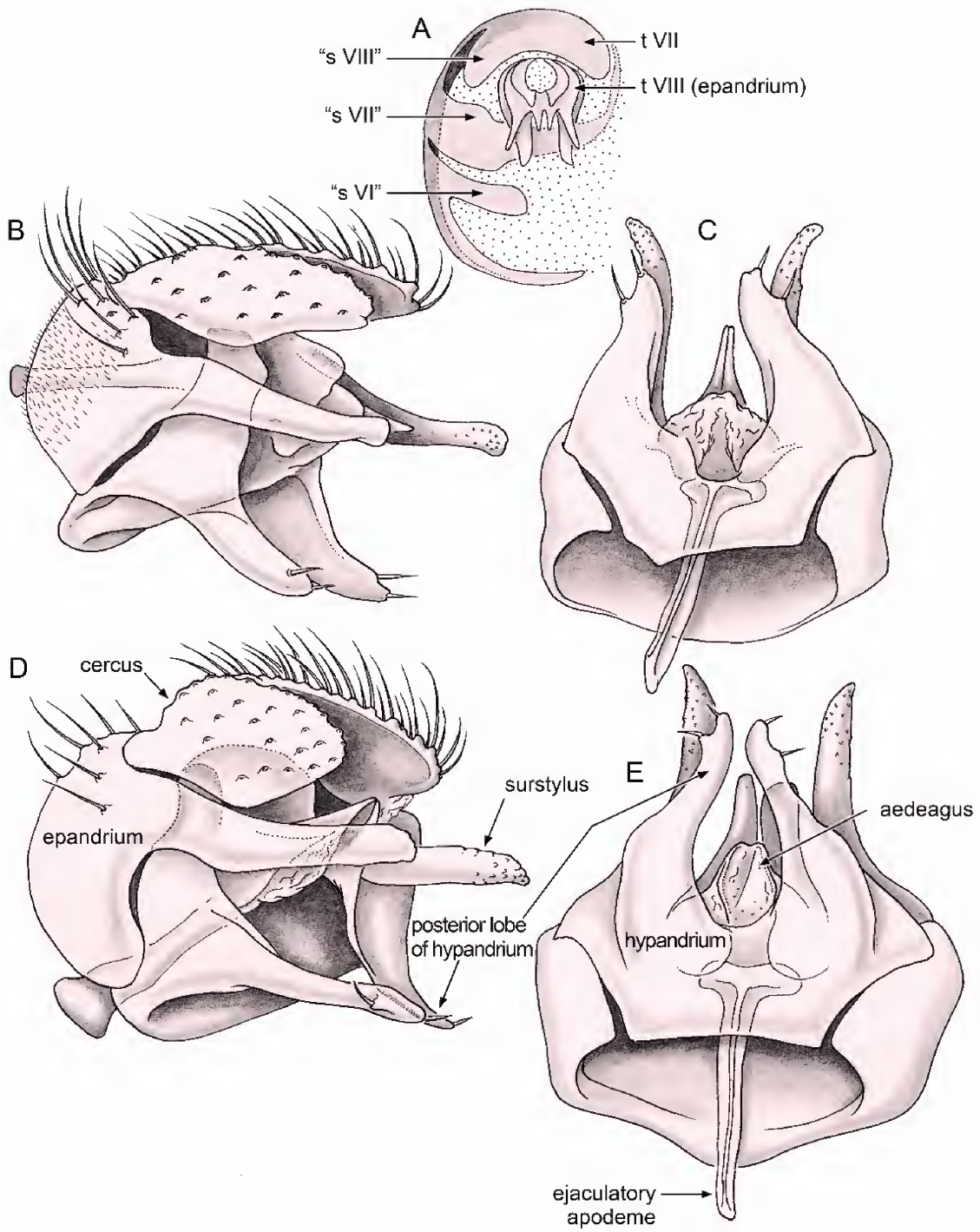

Fig. 31. Male terminalia of *Xenasteia* spp. **A–C:** *Xenasteia divergens*. **A.** Segmentation in posterior view (diagrammatic), comparing homologies with Hardy (1980) and as used here. **B, C:** Entire genital capsule in oblique lateral view. **C.** Entire genital capsule in ventral view. **D, E:** *Asteia fijiana*. **D.** Entire genital capsule in oblique lateral view. **E.** Entire genital capsule in ventral view. B–E to same scale.

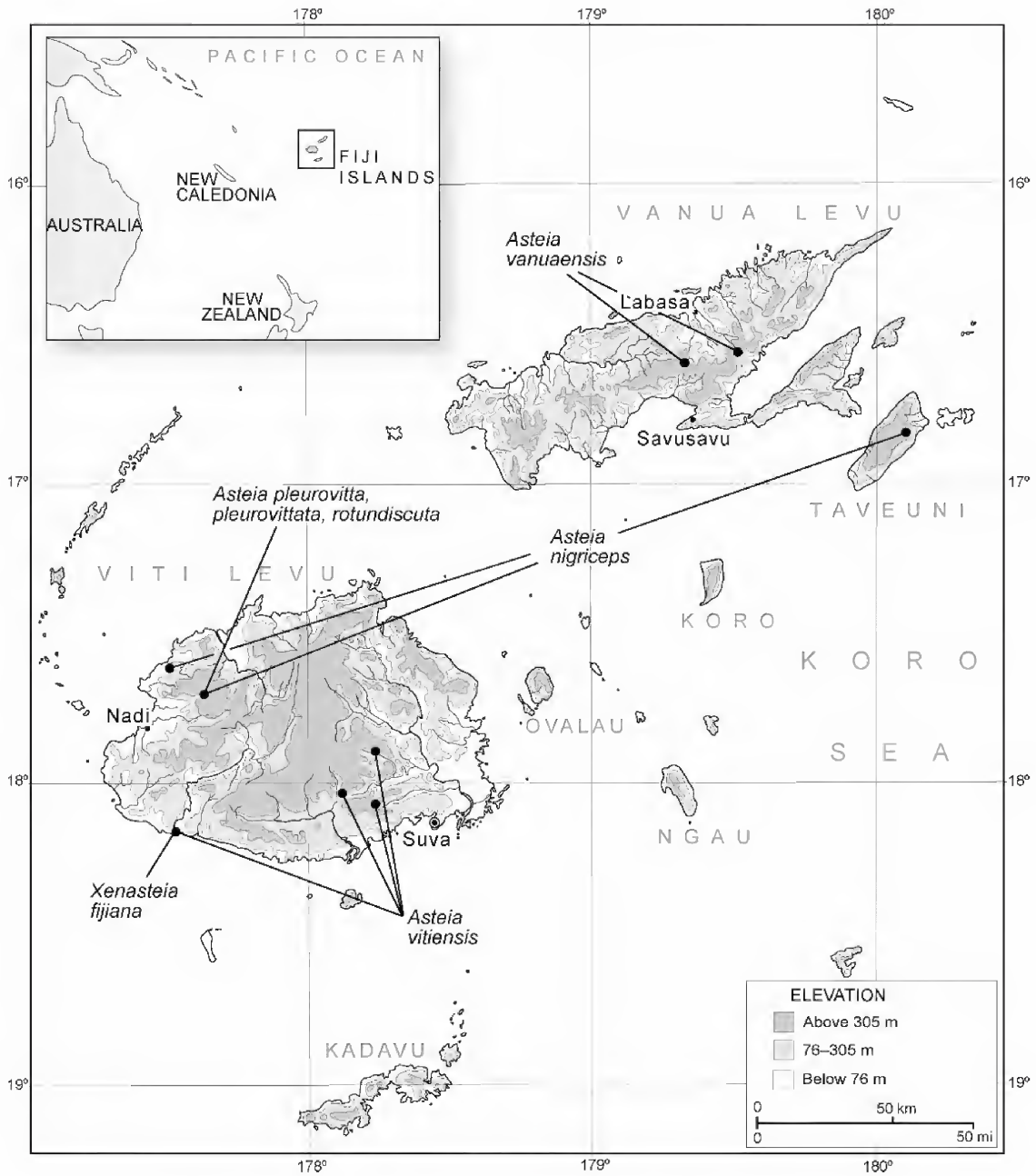

Fig. 32. Distributions of Fiji *Asteia* (Asteiidae) and *Xenasteia* (Xenasteiidae).

base of paraphyses and posterior lobes of hypandrium. Aedeagal apodeme long.

TYPES: Holotype, male (dissected). Fiji: **Viti Levu** Isl., Sigatoka Prov., Sigatoka Sand Dunes N. P., Malaise [trap] 22.XII.02–3.I.03 FJ6B, 44 m, M. Irwin, E. Schlinger, M. Tokota'a 177°28′910″E 18°9′999″S FBA045434. Paratypes: female, same data as holotype, except FBA-045434. Other paratype same locality except: 1.1 km SSW of Volivoli, 50 m, 23.IX–8.X.02, Schlinger and Tokota'a, FJVL6b_M03_01, −18.1694, 177.4847 FBA059114 (females not dissected).

ETYMOLOGY: In reference to Fiji.

TABLE 2
Species and specimen numbers of Asteiidae and Periscelididae on major Fiji islands
(Mt = Malaise trap; Asp = aspirated from rolled leaves)

Genus/Species	Viti Levu	Vanua Levu	Taveuni
Stenomicra ariela	1 Asp	0	0
Stenomicra brunnea	0	0	4 Mt
Stenomicra castanea	1 Mt	0	0
Stenomicra distincta	3 Asp	0	0
Stenomicra distinctipennis	4 Mt+	0	2 Mt
Stenomicra pallida	1 Mt	0	0
Stenomicra sylpha	0	0	7 Mt
Stenomicra tokotaai	0	1	5 Mt
Stenomicra xoutha	7 Mt	1 Mt	1 Mt
Stenocyamops luteus	7 Asp	0	1 Mt
Stenocyamops pseudoluteus	3 Asp	0	0
Stenocyamops robustus	4 Asp	0	0
Stenocyamops vittatus	0	1 Mt	1 Mt
Cyamops fiji	4 Mt+	0	0
Cyamops femobrunneus	0	0	5 Mt
Cyamops femoctenidius	0	0	35 Mt
Asteia nigriceps	2 Mt	0	1 Mt
Asteia pleurovitta	5 Mt	0	0
Asteia pleurovittata	8 Mt	0	0
Asteia rotundiscuta	1 Mt	0	0
Asteia vanuaensis	0	10 Asp	0
Asteia vitiensis	27 Asp 2 Mt	0	0

+ a few additional specimens collected by hand by earlier entomologists.

COMMENTS: Specimens of what appear to be *X. divergens* Hardy were dissected for comparison. These specimens, housed in the NMNH, are from Palau, Koror Island, coll. IV.17.57 by C.W. Sabrosky (*divergens* occurs in Palau). *Xenasteia fijiana* appears to be most closely related to *X. similis* Hardy and *X. divergens* based on several features of male terminalia: apex of surstylus is textured (with slight, microscopic scales on mesal surface), anterolateral margins of hypandrium are concave, and the aedeagus is relatively short. Moreover, *X. divergens* (but also *X. sabroskyi* Hardy and *X. shalam* Freidberg) have a velvety, black scutellum—a distinctive feature that unfortunately is rarely mentioned in most of the descriptions.

CONCLUSIONS

Table 2 summarizes the species of Periscelididae and Asteiidae in Fiji, along with the number of specimens known from Viti Levu, Vanua Levu, and Taveuni, and how the specimens were collected (in Malaise traps or aspirated from rolled leaves). Immediately apparent is that Viti Levu and Taveuni are most diverse and well sampled, with 15 species on Viti Levu (9 exclusively) and 10 on Taveuni (2 exclusively). Relative to its area, Vanua Levu is significantly undersampled, with only four species (one exclusive). At this point, distributions within Fiji are, like any rugged tropical area, difficult to determine in such small insects that are poorly sampled. Another obvious feature of table 2 is that there is hardly any overlap within species between the two collecting methods. Five species were found only by aspirating from rolled leaves; 15 species found exclusively in Malaise traps, and two species found using both methods (and in both cases—*Stenocyamops luteus* and *Asteia vitiensis*—a larger series was found by aspirating). There is profound sampling bias in these numbers, since the Malaise sampling was far more extensive than the aspirating. The trapping that collected these taxa consisted of 38 Malaise traps, 15 of which were set up

on Viti Levu, 8 on Vanua Levu, 4 on Taveuni, 4 on Kadavu, and 7 others on smaller islands (Moala, Gau, Koro, and the Yasawa Group), many of which were maintained for at least a year, so sampling was continued through all seasons. The traps on Viti Levu were, moreover, maintained for longer periods, which further explains the much higher species numbers there. Collecting by hand (aspirating from rolled leaves), in contrast, was done for only 10 days during July (2008), in southeast Viti Levu and in south and central Vanua Levu. Lastly, despite the intensive collecting effort, all except two species (*Cyamops femoctenidius*, *Asteia vitiensis*) are known from 10 or fewer specimens. My observations on the flies in rolled leaves suggest that they reluctantly abandon their abode, and may not readily disperse (which would explain their virtual absence in Malaise traps). If the other Asteiidae and Periscelididae have similar habits, the most effective sampling may require discovery of their hosts or microhabitats.

It is very likely that all of the species reported here are endemic to Fiji or some of its islands. That will be difficult to determine for these flies or any arthropods until there is intensive sampling made of nearby islands and island groups, particularly New Caledonia, Samoan Islands, Tonga, Vanuata, and Wallis and Futuna. The discovery that *Stenomicra fascipennis* is a complex of species throughout its range indicates that, further, determining endemism will require detailed and comprehensive species revisions. Whether any of these species form endemic clades (i.e., insular radiations) within Fiji will require phylogenetic analysis of *Stenomicra* and *Asteia*. With now one-quarter of all described *Stenomicra* in Fiji alone, and the unexpected discovery of four new species of the hitherto Southeast Asian genus *Stenocyamops*, surely a great many species await discovery thoughout the Pacific.

ACKNOWLEDGMENTS

I am deeply grateful to the Niarchos Foundation for the funding to travel to Fiji, and to Ev Schlinger, the Schlinger Foundation, and the Bishop Museum (Neal Evenhuis) for providing Malaise trap samples for study; Neal Evenhuis provided much needed advice. Many of the Malaise-trapped specimens were acquired with funding from the U.S. National Science Foundation grant no. DEB-0425790 to Neal Evenhuis. The Wildlife Conservation Society in Fiji provided expert logistics, particularly Cagi Aginitoba and especially Moala Tokota'a. Moala did the driving, village discussions, advised on collecting spots, assisted in collecting specimens, and trained us in the finer points of *sevu sevu* ceremonies, so he was an absolutely integral part of the study. Hollis Williams and Wayne Mathis loaned many periscelidids from the NMNH collection for this study; Steve Thurston (AMNH) shaded some of my line drawings in PhotoShop, arranged and labelled the plates, and rendered the map of Fiji. My good friend and colleague Lee Herman was a great companion throughout the trip. Wayne Mathis (NMNH) and particularly Neal Evenhuis (BPBM) provided very helpful comments on the manuscript. To all: many thanks.

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